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THE
THEOLOGICAL
WORKS
OF THE
HONOURABLE
Robert Boyle, Esq;
EPITOMIZ'D.

In Three VOLUMES.

VOL. the First.
Containing the *Author's Life* and the *Reconcilable-
ness of Reason and Religion.*

VOL. the Second.
The *Christian Virtuoso.* } A Disquisition of *Final Causes.*
A Free Enquiry into the } Occasional Reflections and
Notion of Nature. } Meditations.

VOL. the Third.
The Excellency of Theology } The Veneration Due to God.
above Natural Philosophy. } Of Things above Reason.
The Style of the Scriptures. } The Martyrdom of Theo-
The Possibility of the Re- } dora and Didymus.
surrection. } Seraphick Love.

By RICHARD BOWLTON, late of *Brazen-Nose College*
in *Oxford*, who Epitomiz'd his Philosophical Works.

LONDON,
Printed for TAYLOR, Sold by W. TAYLOR, at
the Ship in *Fater-Noster-Row*. MDCCXV.

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Robert Boyle.
F.R.S.
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In three VOLUMES.

Containing the
Essays of Religion and Natural Philosophy.
the first.

the second.
ADDITIONAL RELECTIONS AND
OCCASIONAL RELECTIONS AND
MEDITATIONS.
the third.

the fourth.
The Excellency of Theology
above Natural Philosophy.
The Unity of the Sciences.
The Necessity of the
Moral and Natural
Philosophy.
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By ROBERT BOYLE, F.R.S.
in Oxford, who Rpt. the Philosophical Works.

Printed for
the Shop in St. Dunstons Church-yard.
LONDON.
at

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VOL. I.

To which is Prefix'd

HIS

LIFE.

By **RICHARD BOULTON**, late
of *Brazen-Nose College* in *Oxford*.

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ESQ.
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VOL. I.

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HIS

LIFE.

By RICHARD HILLTON, late
of Brasenose College in Oxford.

LONDON,

Printed for J. Taylor, and sold by W. Taylor at
the Ship in Pall-mall. MDCCLXX.

TO HIS

Royal Highness
GEORGE
PRINCE of VVALES, &c.

May it please Your **HIGHNESS;**

W Hilst all Loyal Subjects,
are Zealous in congratulating Your **ROYAL FATHER'S** happy Accession to the Throne; and rejoyce to see themselves secure, under his **MAJESTY'S** Protection, and a Protestant Prince; I hope Your **HIGHNESS** will pardon my Presumption, if I at once congratulate his

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Worthy Successor, and lay at your *HIGHNES'S* Feet, the Works of an Author, not unworthy the best of Patrons.

All those who are sincere Lovers of their Country, and prefer the Pulick Good, before private and sinister Ends, cannot but be sensible of the ill Consequences of a Roman Prince, sitting upon a Protestant Throne; which not long since, threatned the Security of our Lives, and the Subversion of our Rights and Privileges, and what is more dear, the Enjoyment of our Religion; which must needs be more acceptable to God Almighty, than that Religion, which not only imposes Impossibilities as Matters of Faith, but encourages Vice, and esteems it Vertue, to serve a particular Purpose; Injustice looses it's Name, when their Temporal Interest stands in the Way, and Murther ceases to be a Crime.

Those

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Those who have long hoped to bring us under this unhappy Yoke, and involve us in such destructive Infelicities, have endeavoured to attain their ill Designs, and encouraged the vain Hopes of a Pretender, by sowing Discord, and making Divisions amongst Us, that our Ruin might be admitted, and make Way, through our own Breaches; their own Power being unable to prevail upon a united Body.

But Providence having shewn a peculiar regard to us in his Dispensations, and made us happy, by placing upon the Throne a *PROTESTANT PRINCE*, whose Wisdom and Conduct is so highly approved, by all loyal and unprejudiced Subjects, hath frustrated the destructive Hopes of ill designing Men, and confirmed us in a desirable Tranquillity.

His *MAJESTY'S* Exemplary Christian Charity, besides his other Virtues, will

soon

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soon Unite those Divisions, and reconcile those Animosities, which were the Designs of hot-headed Men, and the Hopes of those that sought our Ruin: And when those Breaches are healed, which were inflamed by the inveterate Seeds of Sedition and Faction, the united Members of this Great Body, will soon find the happy Effects of a Prudent *PRINCE*; and admire that Wisdom that made them a happy and flourishing People, and His *Majesty* will be as famous in Peace, as his Predecessors have been in War.

It will not then be disputed of what Church, whether of *Paul* or of *Apollos*? but both Parties exercising Christian Charity towards one another, will consider themselves as Members of one Body, which being serviceable to one another, grow stronger by acting unitedly, and they will then praise that Wise Head, that healed their Divisions, and was the Author of their Prosperity.

It

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It is a Distemper in the Nerves, which descend from the Head, when one half of the Body is Emaciated, and wants it's due Influence of Spirits; but when both Parties enjoy the happy Protection and just Encouragement of their *SOVEREIGN*, and live undisturbed in their Rights and Priviledges, that Kingdom which is united, may hope to stand and flourish; and it will be a Satisfaction to the Head, to see all the Members not only united, but Flourishing and Prosperous.

This is what we may hope for, under His *MAJESTY'S* most Auspicious Reign; and which adds to our Satisfaction, is, that when it shall please God to call Him from an Earthly to a Heavenly Crown, these Blessings will still be continued to us, under Your *ROYAL HIGHNESS*, who have already signalized your Self, by Heroick Actions, and those other Noble Vertues, which promise us a lasting and succeeding Happiness, being qualified to
Govern

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Govern in time of Peace, and to Defend
us, if obliged to War.

None need we doubt, but Your *HIGH-
NESS*, will follow the Exemplary Steps of
Vertue and Christianity, which are so shi-
ning and evident in Your *ROYAL FA-
THER*, and which already appear to our
great Satisfaction in Your Self.

The Honourable Author, whose Works
we presume to lay at your *HIGHNESS'S*
Feet, was always esteemed by Princes, as
well as all Learned Men, not only for his
Piety and Learning, but his Knowledge in
all Parts of it, as well as his Noble Ex-
traction, being both a good Christian,
and a great Philosopher; and though he ad-
hered to the Church of England, yet he
had Christian Charity for other Seats or
Perswasions, and expressed in his Writings,
his Aversion to those Heats and Animosi-
ties, which arise in Men of different Per-
swasions.

And

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And as he had a great Esteem for all other Christian Vertues, so he expressed his Value for that of Humility; placing it amongst those which make up Magnanimity, and argue Greatness of Mind; which he thought most worthy to be admired in those, whom Fortune had placed in the highest Stations; and who have the Greatest Temptations to the Contrary.

This is signally evident both in His *MAJESTY* and Your *HIGHNESS*. Humility in a Crowned Head being more to be admired than the Crown it self; which commonly affects them that wear it, with Pride and Ambition; nor can this Vertue be less Excellent in Your *HIGHNESS*, who though the Crown fits not on Your Head, it may be said to be on Your Right Hand.

But I pretend not here to give a Character, either of his *MAJESTY* or Your *HIGHNESS*; they are both Subjects too

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too High for me to speak their just Praise, and too Conspicuous to want it; both present and future Ages, will find the good Effects of Wise and Prudent Government; and a Promising Posterity is likely to continue those Blessings to us, which we enjoy; as well as the Remembrance of their Glorious Ancestors.

Nor need I give a Character of the Worthy Author to recommend his Value; the high Esteem all Learned Men have for him, both at home and abroad, may be sufficient to gain Your *HIGHNESS*'s favourable Opinion; and may in some Measure excuse my Presumption.

And since Piety and Vertue are so evident in your *HIGHNESS*, I the less doubt of your Protection, of what may tend so much to the promoting and encouraging of Vertue and true Christianity; of which the Honourable Mr. Boyle was

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was a constant Example, through the whole Course of his Life.

If what I humbly offer at Your *HIGHNESS*'s Feet, may obtain Your *HIGHNESS*'s Favourable Reception; and not be less esteemed for passing through so mean a hand as mine; who am not so vain as to hope, that it will recommend me to Your Favour; It will be the greatest Satisfaction to me, that the Honorable Authors Works, are not less esteemed upon my Account, which might be more acceptable from his own Hands.

All that I shall further add is, That when His *MAJESTY* hath enjoyed a Long and Glorious Reign over a People that cannot fail of Happiness and Prosperity under the Government and Conduct of so Wise and Prudent a Prince, except it be their own fault; and a lasting Peace hath made amends for a Tedious and Bloody War; and when the Almighty Disposer of Kingdoms, who hath
fixed

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fixed the Crown on His Head, shall think fit to call Him to an everlasting Crown of Glory: May Your **ROYAL HIGHNESS** long succeed in Honour and Felicity, and Continue to us those Blessings, which may descend to Your Posterity; which are the sincere Prayers and Wishes of,

May it please your HIGHNESS

Your Most Humble and

Obedient Servant,

RICHARD BOULTON.

THE
PREFACE
TO THE
READER.

T*He Honourable Authors Works have gained so much Esteem and Reputation in the World, for so many Tears past; and their intrinsick value and usefulness being likely to preserve the same to future Ages, there is no need to give a Character greater than they have obtained to recommend them: Their own worth is the best Encomium, and the Instruction they carry along with them, is sufficient to make them acceptable to the Reader.*

However, since the Authors Works were wrote in several distinct Treatises, and the following Sheets contain several of those Tracts, it may not be unreasonable to give the Reader an Account of what he may expect to find here. And for as much as these Books may fall into the Hands of several Persons who have not yet perused the Original Treatises, or which
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by reason of their scarceness, may not easily be come at; it may not be amiss, if we premise something in respect of the Authors Performances, and something in respect of our own.

And First, in respect of the Author, it is not unknown to those that have perused his Works, that though his Books never wanted enough to make them grateful and useful to the Reader, yet his Eloquence and Copious Fluent Style, involved what he wrote in such a multitude of Words, that though they might be more acceptable to Men of Parts, and the more Intelligent sort of Readers, yet those of meaner Capacities could not so well retain the Sense, when delivered in such long Discourses, and with so much Circumlocution. And as the Subjects in themselves are abstruse, so they were likely to be much more so, when the subject Matter of them was intermixed with so many Words, which might puzzle ordinary Capacities, to abstract and carry in their Minds, the sense of the whole.

Thus much being said particularly in respect of the Author, we shall in the next place offer in favour of our selves, that the Copiousness of the Authors Style, making it both chargeable to the Bookseller, and dear to the Buyer, to have his Works Printed at the first Extent, as well as the Reasons before

before mentioned, we thought it might not be unserviceable to the Publick to preserve both the Memory and Usefulness of the Authors Writings, in as small a Compass as the Subjects would admit, without Contracting them so much as to leave out any thing that might be useful and instructive, or extending the Subjects further than necessity required. And though larger Capacities, as we intimated before, might be capable of carrying the sense of what he expressed in so many Words, along with them, yet we hope it will not be ingrateful, even to them, to have the Sense of the whole expressed in fewer, it being much more easie both to the Reader and his Memory, that what is wrote, should be in as small a compass as possible.

Indeed, his Philosophical Works were much more Copious in Words, and wrote with a great deal more Circumlocution, than his Theological ones, and therefore in proportion to the number of Books admitted of a great deal more Contracti^{on}. Besides, what particularly relates to Divinity requires more Circumlocutions than Philosophy, not only to imprint upon the Mind the substance of the Matter, and more compleat Ideas, but to make those sensible Impressions, which might leave the more lasting Marks upon the Memory; and therefore proportionably, this Part of his Works would not admit of so much Contracti-

on. However, we have endeavoured to draw them into as little Compass as the Subjects would bear.

As to the Nature of our Performance, we must bespeak the Candour of the Reader. When we formerly wrote an abstract of his Philosophical Works, the World was pleased to give them a favourable Acceptance, and we hope in this Part we have done our Endeavour to deserve the same, having taken all possible care to represent the Authors Thoughts, with as much brevity as they would admit in his own Words.

And since the Honourable Author hath made it appear by his Writings, that he was not only a great Philosopher, but also a good Christian; as we formerly Epitomized his Philosophical Works, for the advantage of the Publick, we thought it both Justice to him as well as the Publick, to compleat his Works in Abstract; that the World might see, by so good an Example, that Philosophy and Divinity were not inconsistent with one another, and that being a Philosopher, would not be prejudicial to, but rather promote, Religion and Christianity; for as the Author hath observed, though it hath been thought strange, that an Experimental Philosopher should be a zealous Christian, yet both by his Example and Writings he hath made it evident, that Experi-

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mental Philosophy affords peculiar advantages to a well disposed Mind, towards making a good Christian, and by Contemplating the Works of God, to raise a just Esteem and high Veneration for the Author.

Since then Philosophy is so serviceable in promoting Religion, when a Philosopher makes pious Applications of what Truths he discovers, in the following Abstract, we have taken such a Method in ranging the Subjects, where Philosophy is thus applyed; that the Reader might best discern the Intentions and Designs of that worthy Author, and as the Subjects might best serve to illustrate and help to explain one another, and consequently have the best Tendency to promote his Intent and Aim.

As Philosophy then may thus promote Christianity, by way of Introduction to his Theological Works, we have begun with his Christian Virtuoso, in which he makes it appear, not only that Philosophy and Religion are compatible in the same Person, but that Profaneness and Immorality too frequently prevent the good Effects of Philosophy, the Knowledge of Nature being misapplyed by such Libertines to discredit and discountenance the Practice of Religion; whereas a good Man, who is free from the Prejudices of Vice, will apply his Knowledge of the Creatures to confirm

his Belief, and increase his Veneration of the Creator, since the Visible Things of God in the Creation are Tokens and Effects of the Divinity and eternal Power of God. And as Experimental Philosophy discovers the Excellences of God Almighty's Power in the Fabrick and Conduct of the Universe; so it leads us to the Acknowledgment and Adoration of that Power; whereas Superficial Knowledge and ill Grounded Principles only lead Men to Atheism; so that as pious Persons make a good use of Philosophy, such prophan Persons, conceited of their scanty Knowledge, presently conclude themselves wise, and pervert that smattering of Philosophy to Countenance their ill Principles. To shew further, how much Philosophy may contribute to promote Christianity, he proceeds to shew, that it furnishes us with Arguments to prove the Existence of a God, since the more a Man knows, he will be the better able to discover the Excellences of God's Works; and as it is serviceable in proving the Existence of a God, so it assists us to evince the Immortality of the Soul, giving us distinct Notions of the Body and Mind, and the Essential Differences of their Attributes. And as Philosophy helps us to prove the Immortality of the Soul, so it gives us sufficient Proofs of Divine Providence, without which the Excellent Contrivances of the Universe, where all Parts are Subordinately serviceable to one another,

another, could not be carried on and maintained. From hence it further appears, that a Philosophers Temper of Mind and the Method of his Thoughts tend to promote Christianity; for as one that is inclined to search into and value Truths of an Inferior kind, will be better inclined to value Divine Truths, which are of a more Estimable and Eternal Advantage; so a Philosopher that Reasons Mathematically, and makes use of the Testimony of his Senses, will have greater Satisfaction in embracing demonstrated Truths than in disputing Subtlety against them. And to make it appear further, how much Philosophy contributes to promote Theology, he represents, that the studious search of Experimental Truths accustoms a Man to a serious and settled Application of Mind, which is requisite to the clearing of those Notions and Matters of Fact, on which solid Arguments for Natural and Revealed Religion are founded, whereas Superficial Wits, seek no further than the outside of things, and are too soon tired with serious Thoughts, quickly passing from one thing to another, without using due attention to convince themselves of their Errors.

Having thus shewn how serviceable Experimental Philosophy may be to Religion in General, he proceeds to shew, how it may be serviceable to prove the Truth of the Christian Religion,

gion, and as the chief Arguments of the Truth of the Christian Religion, are the Excellency of it's Doctrin, the Testimony of Divine Miracles, and the great Effects produced in the World by it, having distinguished Experience into Personal, Historical and Supernatural, he proceeds to apply those, to recommend the Credibility of the Christian Religion, shewing that several things ought to be believed upon the Information of Experience of each of those kinds, which might otherwise be thought contrary to Reason; and that we ought to have a peculiar regard to those things that are recommended to our belief by Supernatural Experience, since we ought to give the highest degree of Assent to what is taught by those Persons, whom God hath commissioned to declare his Mind, Divine Testimony being much stronger than Human, being warranted by God's Veracity and boundless Knowledge; so that it is impossible for him to be deceived or to deceive us. He further shews the force of Arguments drawn from Miracles, and how far Philosophy assists us in Judging of them; to which he subjoyns the Power and Prerogative of Reason in Judging of those things which are urged in defence of the Christian Religion or against it.

Having thus shewn how a Man may be both a good Christian and a Philosopher, and how much the latter contributes to promote the former,

mer, he proceeds to shew, how in Matters of Faith, things may be above Reason, without being against it; to prevent groundless Exceptions against the Mysteries of the Christian Religion; where he shews that things which are said to be above Reason, are of two kinds, some of which cannot be discovered by the Light of Reason, and others which it cannot comprehend when proposed.

And having thus shewn, how Philosophy may promote Christianity, he proceeds to shew, how Christianity may elevate a Man's Thoughts, and by raising them, promote Magnanimity or Greatness of Mind; and here he first considers the vulgar Notion, and then shews what Notion Philosophers ought to have of it, and wherein the true Notion of it consists; making it appear, that Christianity is a true promoter of Magnanimity, the Sublimeness of the Institution, advancing solid and sublime Vertue, and the Excellency of its Rules, comprehending all the Vertues belonging to our Duty; yet commanding nothing but what we are able to perform. He further shews, that the rewards of Vertue in this World are not only able to animate the Mind, but also the rewards of a good Conscience, a Christian being excited to Heroick Vertue by an entire Confidence of future Felicities, made up of a Confluence of all things that Reason can desire. He farther shews,

shews, what are the Objects of an Heroick Soul, and what they commonly aspire too, as a good Name, especially in that State where they shall be made, a Spectacle to God, to Angels and to Men; to which he adds, Honour and Dignity, which are to be preferred before these Transitory ones in a Kingdom that cannot be moved; where the Righteous shall shine like the Sun in the Kingdom of their Father. To which he adds, the Genuine Marks of Magnanimity, the first of which he esteems to be, a Disposition to please and glorify God, and to promote the good of Mankind; as also, the resisting of the Temptations which ill Examples may lead us into; to which he adds, Patience in Afflictions, and Humility as Arguments of Magnanimity.

The Author having thus shewn, how Philosophy and Christianity are consistent and agreeable, as well as ornamental in the same Person, and that the former may promote the later, and offered something to confirm a Christian in the belief of the Mysteries of our Faith, and to shew, that things above Reason are not therefore to be esteemed contrary to it, and having further shewn, how Christianity may promote Magnanimity of Mind, and tend to compleat him in those Vertues, which are Ornamental to a Christian, we thought it not amiss to distinguish these Subjects in this general

neral Abstract, under the Title of a distinct Part.

And since one of the Fundamental Articles of our Christian Faith is the Belief of the Existence of a God; and since Philosophy hath been misemployed not only by prophane and prejudiced Libertines, but also by Heathen as well as other Philosophers, to the disadvantage of Religion, and those fundamental Articles which Christianity is grounded upon; we shall under the Title of the Second Part of his Theological Works, comprize those Subjects which tend to prove the Existence of a God and Providence, and shew the Errors of those who have been mistaken in the Works of his Hands, derogating from the Honour of God, by attributing the wonderful Effects of his Wisdom and Power to Primary Causes, either not Existing, but only Chymetical and Imaginary, or such as are incapable of producing what alone was the Product of that incomprehensible Being, who was the Author of the Universe.

And First, in his free Enquiry into the Received Notion of Nature, he represents, that as the Soul is a Positive Being it is apt to form Ideas, of all other things as Positive Beings, though some are only Chymetical or Negations or Privations. As the received Notion of Nature, which is only a Notional thing, which nevertheless, some are apt to
repre-

represent as the Author of all things, ascribing that to Nature which is due to the Wisdom and Goodness of God, which is both injurious to the Glory of God and to the useful discovery of his Works. Having therefore shewn, that the Common Notion of Nature is prejudicial to the Notion of a Deity, he rectifies that Mistake by shewing, that what is usually ascribed to Nature is the Effect of God's Wisdom in the Creation, and the Extraordinary and Supernatural Interpositions of Divine Providence. He further represents the various Acceptations of the Word Nature, and the ambiguity of it's Sense, which renders the use of it both unintelligible and subject to lead us into Errors; and endeavours to remedy these Inconveniences, by shewing how Nature may be otherwise expressed in it's several Senses. He likewise shows the Insufficiency of the Word Nature in the Sense used by Aristotle and other Philosophers, and offers his Reasons why he does not use it in the vulgar received Notion, since it is neither made use of in the Mosaick Creation nor the Israelitish Writings. And having further enumerated the Common Epithites and Axioms of Nature; He illustrates the true Notion of Nature by several Similies and other Instances, shewing that it is so far from being a thing existent, that it is only a Fictitious Term, contrived

contrived to express compendiously, several things by one Name. Having thus shewn the Insufficiency of the Word Nature, and having offered a fuller and truer Notion of it, he proceeds to make it appear, that God alone is that Plastick Power, and the Grand Author of Heaven and Earth, who having first formed Universal Matter, put it's several Parts into Various Motions, which were guided and disposed by his Wisdom and Power, so as to Convene into that Beautiful Structure, the Universe; having settled such Laws of Motion amongst the Parts of Matter, that by his Ordinary Concourse, the Parts of the Universe once compleated, should continue the Oeconomy, and propagate the Species of Living Creatures, so that God's Wisdom and Power concurred, according to those Ideas he had determined them to conform to; so that what is called the Nature of a Body is not comprized in it's own Nature or Essential Form, since it requires the conscourse of external Agents to perform several of it's Operations.

Having thus shewn the Erroneousness of the vulgar Notion of Nature, and that it is prejudicial to Religion, he proceeds to make it appear, how the Heathens were misled by it, which gave rise probably to those Idolatrous Practices in Job's time, and the Idolatries used amongst the Sabeans, which were
still

still continued in future Ages, as in Galen's, time, and hath further spread amongst the Chinese; nay even the Jews and Christians have been corrupted by the Antient Idolatrous Errors. He further shews, the ill Effects the Belief of the Soul of the World had amongst the Gentiles, and how prejudicial it was to the Worship of the true God; and since the Antients confounded that and Nature together, and as they believed the Universe to be endowed with Life, Understanding and Providence, which misled them into Error, Christians ought to have a care, how they admit such a Being as Nature, which Men are apt to ascribe as many Prerogatives to, as the Idolaters did to their Mundane Soul.

And to shew further, why the vulgar received Notion of Nature ought to be rejected, he not only shews, that it is assented to, and assumed without, sufficient proof, but that there is no need of such a distinct Intelligent Being, as Nature is represented, since the Phenomena ascribed to the Power of Nature flow from the Fabrick and Constitution of the World, as constituted by the Omnipotent Author of the Universe. Besides, the Notion of Nature as commonly held is not only dark and unintelligible, but dangerous to Religion, and consequently to Christianity, since ascribing to Nature the Wonderful Effects

jects they see in the World instead of 10 God, they rob him of the Veneration and Gratitude due to him, and praise her for what they receive from God. And since the greatest Arguments of a God and Providence may be taken from Gods Wise and Visible Conduct in the World, to ascribe such things to Nature does not only weaken those Arguments, but take away the necessity of acknowledging a Deity.

He further shews, that what is said of Natures abhorrency of a Vacuum, is accountable for by Mechanical Rules and Examples, and though the Tendency of Heavy or other Bodies is ascribed to a Disposition implanted by Nature, yet those Tendences depend upon Mechanical Laws. And tho' some may Object that those seeming Anomalies in things, may be Objected against a Providence as well as Natures Care, yet he shews, That God Almighty as Sovereign of the World, hath not only the Power to dispose of his Works as he pleases, for his own Glory, but that his Wisdom being past finding out, he may have Designs in those Anomalies which we cannot discern; and consequently may shew as much Wisdom and Providence in the receding from the Laws of Nature, as in establishing of them. And as Providence had several Ends in forming his Creatures, so he principally respects the Universal

versal good of his Works, so that we ought not to be too rash in censuring God's Providence, since the good of some particular Creatures, being not the end of God's Creation, we must not expect, that he should regard the good of some particular Creatures, before the welfare of those of a Superior Rank, so that things which seem incongruous to Providence, not only are agreeable to it, but tend to accomplish it's Designs.

After this, having considered what Reasons might first induce the received Notion of Nature, and considered Motion as it is said to be natural or violent, he shews, that Motion at the first was either given to Bodies by God, or impressed upon them by the force of some other Parts of Matter. He further shews, how unreasonable Critical Discharges are attributed to Nature, and that her Care is not at all concerned in the Cure of Diseases, and that frequently in such Cases, God's Providence over-rules Mechanical Laws, and that Anomalies are no Arguments against Divine Providence.

Having thus shewn, how solid Philosophy may be prejudicial, by such imaginary Terms, as Nature, which ought not to be used without Caution and Restriction, he proceeds to represent the Advantage this Discourse may afford to Religion, by preventing Men from run-

ing

ing into those Extravagant Errors, which not only the Antients but some Moderns have been Subject to, by shewing so much Veneration for Nature; Secondly by vindicating the Proceedings of Divine Providence; and Lastly, by inclining Men to pay that just Veneration, Praise and Thanks directly to God, which are usually ascribed to what they call Nature.

Having thus briefly mentioned some of the Heads on which the Author hath insisted in his free Enquiry into Nature; since what he says of Final Causes tend to the Demonstration of a God and Providence, we have to that of Nature subjoyned his Discourse of Final Causes; where he first shews, why Final Causes have been denied by Philosophers, and then having distinguished Final Causes into such as respect the Creation of the Universe, which he calls Universal Ends; Secondly, into such as respect the Symmetry of the System of the World, which he calls Systematical Ends, as they tend to the preservation of the present State, and the Universal Ends of the Creation; Thirdly, others respecting Organized Bodies, and the System of Organized Parts he calls Animal Ends; and those which chiefly respect of Man and he calls Human Ends, which he divides into Mental or Corporeal, as they respect the
c Body

Body or the Mind; From hence he proceeds to examin Cartesius's Opinion in respect of Final Causes, shewing how far a Man may enquire into the Ends God proposed in making his Creatures, and how far things were made for particular Ends, &c.

Having examined Cartesius's Opinion about Final Causes, he proceeds to shew the Usefulness of allowing Final Causes, since the Excellent Contrivance of the System of the World, the Curious Fabrick of Animal Bodies, the Uses of their Senses and other Parts, have been always strong Arguments of the Existence of a Deity, who made those admirable Structures; and that the greatest Praises that have been paid him, have been upon the Account of that Admiration, which was raised by the Contemplation of his Works; therefore it would be injurious to God, to disallow Final Causes, whence these Attributes of Wisdom and Goodness must receive the Honour due to them.

And to prove farther the certainty of Final Causes, he brings several Instances of Final Causes, from the Bodies of Animals, as well as from Inanimate Bodies; and especially from Instances of Distempers of the Eyes, and the different Structure of the Eyes of several Creatures; the Structure of which as well as other Parts are Instances of God's Providence;

Providence; to which Arguments he adds others proved by Divine Revelation.

And to evince further the Doctrin of Final Causes, he proceeds to shew, how Natural Agents tend to certain Ends, and what Advantages Men enjoy above other Creatures, He further shews the Advantages Men receive by Final Causes, not only as Rational Creatures, but as Animals; and that some things are useful only by a Secondary Advantage Men find by them. He likewise shews us, that Gods Ends are further illustrated by Instances of Human Designs. To which he subjoyns, what Cautions a Man ought to use in considering Final Causes, since in respect of Celestial Bodies, it may not be safe to propose Arguments of their Nature, from the Supposition of particular Ends, at least of Human Ones designed by God in framing them, where God's particular Ends are more evident from Revelation than Philosophy. He likewise further shews, that from known Ends, particular Conjectures of the Use of the Parts may be drawn, and that from the manifest fitness of some things to Animal Ends or Uses, it may be reasonable to infer, that they were framed and ordained in reference to it by an Intelligent and Designing Agent, and that Insects are not only Instances of Final Causes, but that the Industry of several Creatures, as well

as the Propagation of their Species, are Instances of God's Providence; and since our Understandings are unfit to judge of God's Wisdom, our Ignorance can be no Argument against his Providence. He further shews that we ought not to be too hasty in judging of Final Causes, since the Use of several Parts are difficult to be understood, so that several Arguments grounded upon Final Causes prove only Conjectural. He further shews, why the discovery of Final Causes, ought not to discourage us from the Pursuit of Efficient Causes, it being the business of a Naturalist, not so much to consider why, as how particular Effects are produced.

Having thus under the Title of the second Part of the first Book considered, what the Author hath said to prove the Existence of a God and Providence, on which the Fundamentals of Christianity are grounded, to shew further, how a Naturalist may by a due application of Mind, further improve Christianity, we have in the third Part, distinguished those Observations which tend to that purpose, under the Title of the third Part of the first Book. And since most of the Instances of Final Causes in the second Part are taken from the Observation of the Eyes of Animals, as a further Instance of Providence, we have begun this Part with his Observations

ons

ons on vitiated Sight. And since Occasional Reflections may be of so much advantage to a well disposed Christian, we have to these subjoyned his Discourse of Occasional Meditations, to countenance and encourage which, the Author hath insisted on these Inducements or Motives.

And First, the Exercise of them banishes Idleness, and keeps us from wasting our Time in idle and vain Company; Secondly, they keep out ill Thoughts, the Soul being constantly employed with good ones; Thirdly, the delightfulness of such Reflections is another Motive, such Meditations supplying us with a variety of Subjects, as Numerous as the Works of Nature or Art; and as Variety is pleasant, so an Occasional Reflector always carries his Library about him; and that which makes them more pleasant is, the unexpectedness of Thoughts, which is the highest degree of Novelty, and exceedingly gratifies Men's Minds. And thus, Fourthly, Occasional Reflections also further conduce to exercise and improve several Faculties of the Mind; Fifthly, He farther shews, how Occasional Reflections may be advantageous in improving Wit, Extemporary Reflections gradually bringing the Mind to a readiness of Conception, and to draw such Conceptions from the Nature of things; as also by improving

c 3

ving the style of the Writer; the uncommonness of the Subjects exercising his Invention to form proper Expressions.

Further Advantages of Occasional Reflections being proposed, as the exciting of good Thoughts and Morions in the Will and Affections, and the promoting Devotion and Piety, he subjoyns, several Examples to shew the advantages and delightfulness of such Meditations, from whence it appears, that Industry and Application may be serviceable and delightful to those that employ it, and that Instruction may be learned out of the most familiar Objects, by those that are disposed to be informed:

Having thus given the Reader an Account of the Subjects contained in this first Volume, we shall only add, that we have not only distinguished it into three Parts, as the Subjects seem to appear of a different Nature, and could not, without being confused and immethodically jumbled together, be contained in subsequent Chapters; but since the Subjects contained in the second Volume, are likewise of a different Nature from those contained in this, we have further made this general distinction, dividing the whole into the first and second Books.

As

As to the Subjects contained in the second Volume, we shall give an Account of them in the Preface premised to that, and shall only here add in respect of this Epitomy, that if any Errors have slipped our Notice in the Errata subjoynd to the Contents, we hope the Readers Candour will excuse and correct them, whether the Errors of the Press or Inadvertency.

But since it was desired that something might be said of the Author's Life, which was so peculiarly Remarkable both for his Piety and Learning, we have undertaken according to the best Circumstances we had the Opportunity to inform our selves with, to draw a brief Scheme of it. We pretend not, that it is so compleat as we could wish, the Memoirs which might have been Material to make it more perfect having been retained or buried in Oblivion for above twenty Tears, which before this time we hoped might have come to Light; but since no Progress hath been made to draw up a Character that hath been so famous all over the World, and deserved so well of Mankind, and might be so Useful and Exemplary, we rather thought it Justice to his Extraordinary Merit, to represent it in the faintest Resemblance, than none at all; and though it might not be so bright as the worthy Original might deserve.

yet Beams that shine through the Clouds are better than none at all, and may put the Reader in Mind of what he was more Excellent in.

And though his Character might in a great Measure be collected from his Writings, yet since the Beams of Light scattered and dispersed, show not the brightness of the Object so well, as when concentered and thrown into a Phocus, we thought it not improper to register some of the chief of his Thoughts upon particular Subjects in that regular Order which the Nature of them in so good a Christians Character might challenge, and call together some Material Circumstances of his Writings, to witness those Excellences which were apparent not only in his Books, but his Practice. Not that this can add any thing to his Character, but it may represent it more clearly to those, who cannot easily spare the Time, or take the Trouble, to draw together a regular Idea of what is interspersed through so many Volumes.

And though we give this Essay, the Title of a Life, we rather think it our selves a faint Idea, than a compleat Draught of it's Noble Original,

The Original was too bright for us to delineate, and too well known for us to detract from it. and therefore we hope, that though we cannot do his Character Justice, what we have said can do him no Injustice; and that the Reader will pardon what is deficient either for want of better Abilities or better Information. I am,

The Readers

Humble Servant,

Richard Boulton.

THE

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THE
LIFE
OF THE
HONOURABLE
ROBERT BOYLE, Esq;

THE Honourable Robert Boyle, *The Intro- duction,*
was not only distinguished by
the Nobleness of his Family
and Birth, but by his early
Piety and the considerable
Progress, his Assiduity and Parts made, in all
manner of Learning; so that he was ex-
empt from that Reflection, which *Juvenal* made
on some, who valued themselves only for the
Merits of their Ancestors, since he might truly
say,

*Quod Genus & Attavi & qua non fecimus ipsi
Vix ea nostra voco.*
He

He had Intrinsic value enough of his own, to entitle him to Honour, besides that of his Family and Extract; so that his whole Life was spent in enobling his own Mind, and cultivating such Studies as might not only be serviceable to himself, but the Generality of Mankind; having published so many excellent Tracts, that whoever reads them would think, that his whole Life was nothing but a continued Series of Study, and employed in improving Useful Knowledge; so that the Perusal of his Books in a great Measure speak his Life, and might seem to spare us the trouble of writing on that Subject, since an Indifferent Person might Judge those enough to take up his whole time, and that but little could be spared for any other Amusements; but his quick and penetrating Thoughts could soon dispatch a great deal of business.

Since then the World is so much obliged to him, for what he hath favoured them with, that we may do all the Justice we can, to the Character of so worthy a Person, we shall endeavour, as far as the Information we can have will admit, to draw a short Scheme of his Life; which will be an Honour to himself, and a Noble Example to Posterity, which can scarce, nay cannot possibly be paralleled.

*His Birth
and Extra-
ction.*

The [Honourable Robert Boyle was fourth Son to Richard the first Earl of Cork in Ireland, and Born at *Lismore* in that Kingdom. *Lismore* is seated upon *Broodwater*, a River on the West side of the County of *Waterford*, just as it leaves the County of *Cork*. It is remarkable for it's Bishops See, where *Christian* the Bishop and Legate of *Ireland* presided, about the Year

Year 1148, a Person very deserving of the Church of *Ireland*; and the place may be said to be no less remarkable for the Birth of this Honourable Person, who hath Signalized himself by so much Learning and Merit, and raised a lasting Character throughout the Learned Part of the World. As for the Account of his Family, we shall take it from what Mr. *Collier* hath observed in his Great Dictionary, which is thus briefly delivered. "*Richard Boyle*, Earl of *Burlington* had this Honour conferred upon him by King *Charles* the II. 1664 and is the first English Earl of that Title; his Father was *Richard* Baron of *Youghall* and *Bandon*, Viscount of *Kinalmeaky* and *Dungarvan*, and Earl of *Cork* in *Ireland*, whereunto King *Charles* the Ist. added that of *Baron Clifford* Earl of *Cumberland*. But that which added to the Glory of his Family is the Fame of the late Earls two Brothers, viz. *Roger Boyle* Earl of *Orrery*, and *Baron Broghall* in *Ireland*, sufficiently recommend to the World by his elegant Writings both in Verse and Prose; and *Robert* no less known by his large Improvements in Experimental Philosophy, and the many Excellent Volumes he hath Published to the World.

And as the Honourable *Robert Boyle* was an additional Ornament and Honour to his Noble Family; so he was not less happy in a Sister the Lady *Renelaugh*, with whom he lived Forty Years, and of whom the Right Reverend Father in God *Gilbert* Lord Bishop of *Sarum*, gives the following Character. "She lived the longest on the Publick Scene; she made the greatest Figure in all the Revolutions of these Kingdoms

'doms for above Fifty Years, of any Woman
 'of our Age. She Employed it all for doing
 'good to others, in which she layed out her Time,
 'her Interest and her Estate, with the greatest
 'Zeal and the most Success that I have ever
 'known; she was indefatigable as well as dex-
 'terous in it; and as her great Understanding
 'and the vast Esteem she was in, made all Per-
 'sons in their several Turns of Greatness, de-
 'fire and value her Friendship; so she had a
 'good Title to employ her Interest with them
 'for the Service of others, by never making a-
 'ny use of it, for any end or design of her own.
 'She was contented with what she had, and
 'though twice stripped of it, she never mo-
 'ved on her own Account, but was the gene-
 'ral Intercessor for all Persons of Merit,
 'or in want, which was the more Christian and
 'Effectual, because not limited to the Compass
 'of Parties or Relations. When any Party was
 'down, she had Credit enough and Zeal to
 'serve them, and made use of those so Effecti-
 'ally, that in the next Turn she had a new stock
 'of Credit; which was wholly employed in
 'that Labour of Love in which she spent her
 'Life; and though some Particular Opinions
 'might shut her up in a Divided Communion,
 'yet her Soul was never of a Party; she divi-
 'ded her Charity and Friendship betwixt both,
 'her Esteem, as well as her Bounty, with the
 'truest regard to Merit, and her own Obliga-
 'tions, without any difference, upon the Ac-
 'count of Opinion. She had a vast reach of
 'Knowledg and Apprehensions, and an Uni-
 'versal Affability and easiness of Access; Hu-
 'mility

'military which condescended to the meanest of
'Persons and Concerns; an obliging kindness
'and readiness to advise those who had any
'occasion for her Assistance; and besides other
'Excellent Qualities, she had the deepest sense
'of Religion, and perhaps more constantly turned
'her Thoughts and Discourse that way,
'than was frequent in her Age. Such a Sister
well became such a Brother, which she might
in a great measure owe to his constant Conversation
and Example, what hath been said of her being agreeable
with his Character; but of this in another place. This may be
sufficient to shew, that though he was an excellent and
bright Ornament of his Noble Family, yet an extraordinary
Concourse of good Qualities were eminent in each Branch
of it, but more especially in himself, who retained all
Vertues in an eminent Degree, as well as the other peculiar
Endowments of his Mind; those shining Branches,
shewing the bright Original from whence they sprung.

All that I shall say further in respect of his Birth
and Extraction, is, that as his Family was, to use the
Words of the Learned Bishop Burnet, "Watered with the
blessings and due of Heaven, as well as fed with the best
Portions of this Life, and produced so many Noble Plants,
so they signally felt the Effects of their Humble and
Christian Motto, *God's Providence is my Inheritance*.
And as he was the only Brother of five, who had none
of those high Titles that sound great in the World;
yet he raised himself a Name, greater than any could
give him, and which all the World consented to.

The

His Education.

The promising Blossoms of his early Piety, which afterwards shone out in full Perfection, and the Specimens of his great Capacity, and large Endowments of Mind, made an early appearance in his Tender Years; which were first cultivated in the meaner Schools in *Ireland*; where, no doubt, his Progress was answerable to the quickness of his Parts, and the great advantages his Noble Birth afforded him.

When his tender Years had been duly instructed and improved in the necessary Rudiments of School Learning, and his Age and Opportunities made it reasonable, he further improved and pursued his Studies, in the University of *Leiden* in *Holland*; where his Progress and Application were suitable to the Greatness of his Genius, and the Natural Disposition he had, to furnish his Mind with such things, as were grateful and acceptable to a Disposition that aimed at Universal Knowledge, especially such as might become so great a Soul, and enlarge the Sphere of a Capacity of so vast an Extent.

His Travels.

When he had improved his Studies at the University, he omitted no Opportunities of adding to the Knowledge of Books, the study and search into the Knowledge of Men, which can no way be better understood, than by traveling into foreign Countrys; where the Manners and Customs of People appear more free and undisguised to Strangers, than to their own Country men; and could be advantageous to none more than to one, whose sagacity and quick apprehension, would enable him to make the nicest Judgment, and whose plentiful Fortune

would

would allow him all the Opportunities, which Observation or Conversation could afford to improve a Mind so well qualified to receive Instruction, and to admit of Improvement. To this end, when he had qualified himself in the University, he first Travelled into *France*, and then into *Switzerland*, *Italy* and other Countries, where his Curiosity or Hopes of advantage in the Improvement of his Knowledg inclined him; and as his early Piety was well grounded in a well disposed Mind, his Vertuous Inclinations secur'd him from admitting the least Tincture of the Vices of the Places he came in, or of the Times; so that he rather like the industrious Bee, extracted and collected Honey out of the purest Flowers, and converted the worst of Examples to a pious Use, and to use Dr. *Burnet's* Expressions, "He began early to shew both a Probity and Capacity, that promised great things; and passed through the Youthful Part of his Life, with so little of the Youth in him, that in his Travels, while he was very young, and wholly the Master of himself, he was out of the reach of the disorders of that Age, and the Countries he passed through. He had a Modesty and Purity so deeply rooted in his Nature, that those who knew him the earliest, have often told me, that even then Nature seemed entirely sanctified in him.

And as Liberal Education, great Opportunities, and plentiful Fortunes too frequently expose young Gentlemen to great Inconveniences, and as great Vices, Mr. Boyle being prepossessed with good Principles, and the early Seeds of Piety, reaped the quite contrary advantages.

*His early
Piety and
Learning.*

advantages. And as he had a great and noble Fortune, it was especially great to him, as he was endowed with a great and noble Soul, to make use of it to the best purposes. The early increase of his Piety and vertuous Principles, he frequently owned to receive a great deal of assistance and advantage from his Conversation with the Godly and Pious Archbp. *Usher*, Primate of *Ireland*, who as he was a particular Friend to the whole Family, was not backwards in promoting the growth of those hopeful Seeds he might easily discern would produce a noble and plentiful Harvest. He put him chiefly on the study of the Scriptures in the *Original Languages*, which he for several Years pursued with so much exactness, that he could readily quote all remarkable Passages in *Hebrew*; and he read the *New Testament* so diligently in *Greek*, that when any passage was mentioned upon any Occasion, he could readily repeat it in that Language.

*The Progress of his
riper Years.*

Having hitherto taken Notice, as far as we can inform our selves, of what happen'd in his tender Years, and the early Progress he made towards Heaven, and the hopeful Foundations he had laid for a Noble Superstructure, we shall proceed to that which his riper Years made so Splendid and Magnificent, and which had not only a large foundation in the Knowledge of Natural Things, but soared so high, that he conversed with Saints and Angels, and even Seraphims themselves; nor did he only trace the footsteps of Nature, but penetrated so deep, as to discover the bright Apprehensions of a God and his Attributes, so that in him

we

we may, to use the words of the Learned Dr. Burnet " triumph upon the Honour that belongs to Vertue and Religion, which appeared so eminently in a Life, which may be considered as a Pattern of Living, and a Pattern so perfect, that it will perhaps seem a little too far out of sight, too much above the hopes, and by consequence, above the endeavours of any that might pretend to draw after such an Original, which must ever be reckoned amongst the Master Pieces even of that *Great Hand* that made it. I might here challenge the whole Tribe of *Libertines* to come and view the Usefulness, as well as the Excellence of the Christian Religion, in a Life that was entirely dedicated to it, and see what they can object. I ought to call on all that were so happy as to know him well, and observe his Temper and Course of Life, and charge them to sum up, and lay together, the many great and good things, that they saw in him, and from thence to remember always to how vast a Sublimity the Christian Religion can raise a Mind, that does both thoroughly believe it, and is entirely governed by it. I might here also call up the Multitudes, the vast Multitudes of those who have been made both the wiser and the easier, the better and the happier by his means: but that I might do all this with the more advantage, I ought to bring all at once into my Memory, the many Hours that in a Course of nine and twenty Years Conversation have fallen to my own share, which were very frequent and free for above half of that time, that have so often both humbled and raised

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me,

Dr. Burnet's Character of him.

' me, by seeing how exalted he was, and in
 ' that feeling more sensibly my own Nothing
 ' and Depression, and which have always edi-
 ' fied, and never once, nor in any one thing
 ' been uneasy to me. When I remember, how
 ' much I saw in him and Learned, or at least
 ' might have Learned from him; when I reflect
 ' on the Gravity of his very Appearance, the
 ' Elevation of his Thoughts and Discourses, the
 ' Modesty of his Temper, and the Humility of
 ' his whole Deportment, which might have
 ' served to have forced the best Thoughts even
 ' upon the worst Minds, when I say, I bring
 ' all this into my Mind; as I form upon it too
 ' bright an *Idea* to be easily received by such
 ' as did not know him: so I am very sensible
 ' that I cannot raise it equal to the Thoughts
 ' of such as did. — I cannot bring out into
 ' distinct Thoughts, all that of which I have
 ' the imperfect hints and ruder draughts in my
 ' Mind, which I cannot think equal to a Sub-
 ' ject so far above my own Level. And if the
 ' Depth and Sublimity of the Subject was too
 ' extensive for one of my Lords Learning and
 ' Capacity, we may easily suspect that what we
 ' shall say, will be far short of his Noble Chara-
 ' cter, which can be no other way better expres-
 ' sed, than by acknowledging that what we can
 ' say of him, can only help to represent the faint-
 ' est *Idea* of the brightest of Character.

He studied the Scriptures for many Years so
 exactly, in the Original Languages, and with
 so much critical Strictness, and understood that
 Sacred Book so well, that few of those that
 made Divinity their study, could parallel him

or

or go beyond him: and had so great a regard & value for that *Sacred Book*, that if any thing happened in Conversation, which might contribute to illustrate and explain, and give him a clearer view of any Passage or Text in Scripture, he received it with pleasure and satisfaction, and examined it with the greatest accuracy and strictness, and was solicitous to have it in writing, if he perceived the Person not unwilling or uneasy; and as he was very diligent and exact in searching the Scriptures himself, so he thought it the Duty of every Christian to do so; and as, *whatever things were written aforetimes, were written for our instruction*, Rom. 15. 4. on this Occasion he delivers his Opinion to this Purpose, in his first Part of the *Excellency of Theology above Natural Philosophy*; when God hath given greater Intellectual Abilities than to the generality of Christians, and we willingly come short of the Mysteries and Truths of Christianity, which he hath invited as well as commanded us to search after, it is not much of Gratitude to neglect that Duty; does it look like Gratitude, to receive Understanding and the hopes of Eternal Felicity, without enquiring into the Nature and Purposes of that good God, who hath revealed them in such an Excellent way? to be solicitous about the Properties of an *Atom*, and careless of the Attributes of the *Great God*, that *formed all things*. What regard does it shew to Religion, when we question the Truth of a Proposition in Staticks, about the Centre of Gravity; or in Geometry, about the Properties of a Curve Line, and yet take the Articles

of Faith, Matters of Everlasting Consequence, upon the Authority of other Men, as subject to mistake as our selves, when satisfaction may be had from the Word of God? the Noble Bereans, when the Gospel was proposed to them, *searched the Scriptures daily, whether those things were so, Acts 18. 11.*

*His Skill
in the Ori-
ginal Lan-
guages, &c.*

And though he understood the *Hebrew* very well, and had made a considerable progress in the Rabbinical Writings, and other Oriental Languages; and had read so much of the Fathers, as to form a clear Judgment of all the Eminent Ones, yet he declares in his Excellent Tract of the *Style of the Scriptures*, that those Sacred Writings have the greatest Influence both on our Faith and Practice, God's Will being no where to be better Learned than where it is revealed, and as Obedience to God's Commands requires those from us, he further declares his Opinion freely, to this Purpose, I take the Liberty to examin what God says, without confiding in what Men, by their Interpretations may make him say; considering the Sense of the Text, without the Glosses of Interpreters, or even of the Fathers. And as he was well versed in the Sacred Writings both of the Old and New Testament, so he was earnestly desirous that all Mankind should be acquainted with them too.

*His Know-
ledg and O-
pinion in
Controver-
sial Divi-
nity.*

And as he had read so much of the Scriptures as was sufficient to make him a compleat Master of the Body of Divinity, and had examined nicely the whole Controversies of Religion; so he was far from being byassed in his Judgment, by any Parties or private Interest; and

as he did not confine himself to any Party, so he excluded no Party from him; having a Christian Charity for all Parties, who were truly Religious, which he plainly declares in his Tract of the *Style of the Scriptures*, for says he, I read the Sacred Authors and their Expositors with an Impartial Aim, having no design to prove any Articles by the Scriptures, but rather chusing to deduce my Opinions from it, than to rest them to prove my Opinions; nor do I neglect those Arguments or Passages which confirm the Doctrine of the Church I adhere to, yet only chusing such Passages as may solidly justify my Thoughts, and as may raise in me a Reverence for the Scripture and Christianity in general, observing such things chiefly, as may confirm the Articles clearly discovered in the Bible, and shew the Excellent Majesty of the great Author, and the manifold Wisdom of God. Nor do I think any Pains mispent that tend to evince that great Truth, that the Scriptures are the Word of God, and I use not the Scripture to defend the Opinions only of particular Parties, but to contemplate the Beauty, Symmetry and Magnificence of the Composition, and to excite my Devotion to the Duty there Preached.

And as he was impartial in putting Construction on Texts of Scripture, he loved no Practice or Niceties that might occasion Divisions amongst Christians, and to use Dr. Burnet's Expressions, "he thought pure and disinterested Christianity was so bright and so glorious a thing, that he was much troubled at the disputes and divisions which had risen about some lesser

His Opinion of Disputes in the Church.

• lesser Matters, whilst the greater and most important, as well as the most universally acknowledged Truths, were by all sides almost as generally neglected as they were confessed; and pursuant to this Character the Honourable *Mr. Boyle* in his *Style of the Scriptures* proposes several Fundamental Controversies, which he says are more worthy a Wise Man's Study, than a great many trifling ones that puzzle Christendom. But though, as he elsewhere says, we ought to have several Texts of Scripture in Readiness, and that Christians ought to be armed with Spiritual Weapons, and to have *the Sword of the Spirit* in readiness upon all occasions, yet he was far from encouraging unnecessary Disputes; and if at any time, Controversies happened, they ought to be avoided by illiterate Persons; for when he advises Christians to arm themselves with the Sword of the Spirit, he gives this Caution. What we have said, we suppose to be spoken to Intelligent Persons, but were we to speak to common People, who could not hope either for want of Parts or Leisure, to vindicate either themselves or others, I should advise them, not to listen to, or undertake Disputes of any kind, about that sacred Book, especially when proposed by insinuating Wits; for it not being necessary for the Common People to be acquainted with the Controversial Parts of Scripture, nor to be acquainted with those that wander from the common way to Heaven (which he takes those to do, that puzzle themselves with unnecessary Niceties.) It is not convenient for them to disquiet their Faith, or to hazard the subverting of it, to gratify unnecessary Curiosity, which

like

like the *Itch*, grows worse, though it gratifies the Fancy to scratch it. And he further represents the Danger, to prevent such Persons from falling into such Inconveniences; for, says he, though a Man's design may be to gratify his Curiosity only, by hearing of Wit and Novelty; yet such Notions are apt to raise strange Scruples in such Men's Thoughts, which, tho' easily answered, are hard to get out again. And as in Infectious times, Physicians forbid smaller excesses, or other irregularities, which may breed distempered Humours, because slight Fevers are apt to grow Pestilential; so those that value their Faith, ought to be cautious, lest the Custom of railing against the Scriptures, should taint them, either by Reading or Conversation; lest the smallest degrees of Contagion should end in Irreligion.

From hence it appears, how Cautious Mr. *His Affection*
Boyle was of entering into Dangerous Disputes, *of the Holy*
especially with such as were unfit to undertake *Writ.*
them. And as he thought a great many Disputes in Religion unnecessary, so he esteemed the Bible as the chief Instructor of our Faith, and Guide of our Actions; which being the Word of God was most likely to reveal his Will. To shew his high Esteem and Veneration for those sacred Writings, he hath not only wrote an Excellent Tract in Defence of it, but represents, that as it is the Word of God, and is agreeable to his Will, so the Bible in respect of other Books is as Diamonds amongst pretious Stones; as the most sparkling, aptest to scatter Light, and as the most solid, aptest to make Impressions.

Impressions. And as the Word is termed a Light, the worst and plainest Rusticks may by the benefit of it's Light direct his ways, and the greatest Philosophers may be exercised with the abstrusest Mysteries; so that the Ignorant may learn Knowledge, and the wisest find their Ignorance. And to represent his Esteem for it further, he thus Expresses himself. The Bible looses much of it's Lustre by not being considered as a System, it's greatest advantage appearing when displayed at it's full Dimensions; the Study of it affording so much delight to devout and intelligent Prosecutors of it, that like the *Hallelujahs* of the Blessed, the Duty is a Pleasure, and the Exercise a Recompense of Piety. And to shew what delight he took in it, he says, when I contemplate *Moses* and *Elias* talking with Christ, I mean the Law and the Prophets, concurring with the Gospel, I cannot forbear crying out with *Peter*, *It is good for me to be here*, *Mat. 17. ver. 4* so that I cannot wonder the *Psalmist* should compare the transcendent Sweetness of the Scriptures to that of Honey.

His Private as well as Publick Studies of the Scriptures.

And as he had a just Veneration and Esteem for the sacred Writings of the Holy Pen Men, so he manifested his value for them not only by making a Publick Defence against their Opposers, but hath published a whole Treatise to excite us to the Study of them; and as he sedulously pursued the Study of Divinity in General, so he as constantly made it his daily Study, for he had not only several Chapters read to him every day, but once a Week had a Chapter in *Genesis* read to him in *Hebrew*,

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as I am informed by one, who he for some Years employed every Saturday Morning for that Purpose; and as he daily heard the Scriptures himself, so he urged it as a duty incumbent upon all Christians to do the same; thus fixing them upon our Memories till our Understanding can attain the Knowledge of them; which Duty is not only incumbent on private Persons but Kings themselves; of which he gives a very signal Instance, for when God made a King to govern his People, concerning the Book of the Law he said, *It shall be with him, and he shall read therein all the days of his Life,* Deut. 17. 18, 19. by which means it shall be prolonged, ver. 20. and the King was not only obliged to Read, but to Write the Law; and to write it out as he was King, for though he had a Copy of the Law of his own Writing, before he was King; yet afterwards he was obliged to write it with that Hand that held the Scepter; and certainly it cannot be an Employment too mean for Princes to secure their Eternal Felicity. But to proceed,

As Mr. Boyle was a diligent Studier of the Scriptures, and endeavoured to perswade others to the same Practice and having by his constant Application, and the large Endowments of his mind grounded himself in the Fundamentals of Christianity, so compleatly, he could not fail of being as devout a Christian, being well acquainted with the Doctrine of Christianity as well as Morality, which he proves to be no where more copious and cogently delivered than in Sacred Writ. For, says he, though I have formerly taken pains to peruse
Books

*What he
thought of
Morality.*

Books of Morality, yet since they have only a Power to perswade, but not to command; and Sin and Death do not necessarily attend the Disobedience of them, they have the less Influence; for since we may take the Liberty to question Human Writers, I find, that the Methods they take to impose their Writings upon us, may serve to countenance either Truth or Falsehood. And indeed Moralists excepting those Duties which Nature, or our Curiosity in enquiring into times and places, have taught us, seem rather to fence with Wit: their Popular Topicks being built upon such uncertain Foundations, that they may with as much Probability be overthrown as defended; and our Corruptions prove Sophisters sufficient to deny that a Duty, they have no mind to comply with. But when any thing is commanded by the Scriptures, being conscious, that it is the Will of that *Father of Spirits*, I dispute not to obey his Orders, and comply with his *voice* *For thus saith the Lord*, more than with *Plato's* Dialogues, or *Seneca's* Epistles, those Ethicks having the truest Foundations which are built upon the Sense of the Scriptures. — and further, amongst bare Moralists, I would examine and distinguish, how far what they say, is consistent with Reason, as well in respect of the Inducements as the Nature of what they offer, being unwilling to be cheated into Vertue, without the Liberty of Acting as a Rational Creature and Christian.

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We have hitherto superficially taken Notice of some Occurrences or Passages of the Honourable Mr. Boyle's Life in General Terms; from whence it appears, how large a Foundation he laid for Christianity, so that to use the Words of the Learned Dr. Burnet Bishop of Sarum. "He had possessed himself with such an Amiable View of that Holy Religion, separated either from Superstitious Practices or the Sourness of Parties, that as he was fully persuaded of the Truth of it, and indeed wholly possessed with it, so he rejoiced in every Discovery that Nature furnished him with, to illustrate it, or to take off the Objections against any Part of it. He always considered it as a System of Truths, which ought to purify the Hearts, and govern the Lives; and as he believed it himself, so he hath made use of convincing Arguments, to persuade others to the belief of it, not only shewing the Grounds of Natural Religion to be founded upon Reason, but also making it appear, that the Christian Religion is grounded upon Reason and Experience; for, says he, since Man is endowed with Reason to tell him, that God is both his Maker and continual Benefactor, and that consequently, he may justly require Worship and Obedience; and since the same Rational Faculty may tell him, that it may well become the Majesty and Wisdom of a God, as a Sovereign of the World, to prescribe Laws to his Creatures, who are capable of Understanding as well as of Obeying them, and Glorifying their Author; and further, since his own Mind, if not vitiated, will convince him, that he owes a Veneration

His Christianity more particularly considered.

for

for the Author of his Being, and his continual Benefactor; and since his Conscience upon these Accounts will convince him, that he owes all the Duties of Natural Religion; and since his Reason will tell him, that his Soul is Immortal, and therefore capable as well as desirous of being everlastingly happy, he must consequently be desirous of what God would have him believe or do. And therefore if he shall be informed by Supernatural Revelation, what manner of Worship and Obedience would be most acceptable to him, and God shall encourage him, by Promises of that Felicity, to both of them, he cannot but thankfully acknowledg such Proceedings, becoming the transcendent Goodness of God; so that, one who takes Notice of God's wonderful Providence in his Dispensations, will have an advantage to confirm his Belief grounded upon Historical and other Proofs of Christianity. And to shew, that we have good Grounds for the Christian Religion, he tells us, that we ought to give the highest degree of Assent to what is taught us by God, by those Persons that have been commissioned to declare his Mind; for the Knowledge of, and the faithfulness in, delivering what is witnessed, being required in a Witness, Divine Testimony must be stronger than Human, being warranted by the Veracity of God and his boundless Knowledge, it being impossible for him to be deceived, or that he would deceive us; so that Christianity grounded upon such Demonstrations and Reasons as he offers, no wonder if it bring forth Fruits proportionable to the soundness

of it's Foundation, and that the Tree should bring forth Fruit suitable to it's Goodness.

But that we may trace the Original from whence so many good Works sprung, a little more exactly, and view the solid Foundation of his Moral and Christian Vertues a little more exactly, from Generals, we shall descend to Particulars, and since the Foundations of Christianity depend not only on a firm Belief of Revealed Religion, but also on those Fundamental Articles of our Belief of the Existence of a God, and a Providence, we shall take a view of what the Honourable Mr. Boyle hath said to make his Faith evident, and then we shall proceed to his good Works, which were sufficient to confirm a lively Hope of Everlasting Felicity; for he had not only *Faith* in the highest degree, which along with his good Works might raise a lively *Hope*, but his *Charity* was as Extensive and Exemplary.

That he had a firm Belief of, and Veneration for, the Holy Scriptures, his Writings are sufficient Testimonies; and they are no less Testimonies of his stedfast Belief of the Existence of a God, for which he hath produced the strongest Arguments and Demonstrations. The Belief of a God was so firmly grounded in him, that as Dr. Burnet says, "he had the Profoundest Veneration for the great God of Heaven and Earth, that I ever observed in any Person. The very Name of God was never mentioned by him without a Pause and a visible Stop in his Discourse, in which one that knew him most particularly above twenty Years, hath told me, that he was so exact, that he does not remember

*His Belief
of the Existence of a
God.*

'remember to have observed him once to fall
 'in it. " ——— and indeed it appeared to
 'those who conversed most with him in his
 'Enquiries into Nature, that his main design
 'in that, on which as he had his own Eye most
 'constantly, so he took care to put others often
 'in Mind of it, was to raise in himself and o-
 'thers, vaster Thoughts of the Greatness and
 'Glory, and of the Wisdom and Goodness of
 'of God. This was so deep in his Thoughts,
 'that he Concludes the Articles of his *Will*,
 'which relates to that *Illustrious* Body, the Royal
 'Society, in these Words, *wishing them also a*
 'happy success in their laudable Attempts, to disco-
 'ver the true Nature of the Works of God, and
 'praying, that they and all other Searchers into
 'Physical Truths, may Cordially refer their Attain-
 'ments, to the Glory of the great Author of Nature,
 'and to the Comfort of Mankind. And as he had
 so profound a Veneration for the Name of God,
 so he took a great deal of Pains to convince
 Mankind of his Existence, and to display his
 Attributes, and in disabusing the World, who
 were imposed upon by the Erroneous Notions of
Epicurus & Aristotle, making it appear, that God
 alone was the Author of Things, and the Creator
 of the Universe; for speaking of the
 Author of Things; he says, what they as-
 cribe to Nature, I ascribe to the Wisdom of God
 in the Creation; and elsewhere he says. I, for
 my Part, allow no other Plastick Power but
 God, Antecedent to the Formation of the
 World, there being no Foundation in Scripture
 to acknowledg such a Being; for in the *Mo-
 saic History of the Creation*, it is said, God in
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the beginning made the Heaven and the Earth and when he viewed what he had made, *God saw every thing that he had made,* and said they were good. And to evince, how far God was concerned in the Formation of the World, he supposes it to be after the following Manner: The Great and Wise Author of Things, first forming the Universal Undigested Matter, put it's several Parts into various Motions, by which they must needs be divided into innumerable Particles of different Bulks, Figures, and Scituations; guiding and over-ruling the Motions of those Parts by his Wisdom and Power, so as to dispose them into that Beautiful and Orderly Frame we call the World; some being so contrived as to form Seeds or the Seminal Principles of Plants and Animals. Besides, he settled such Laws or Rules of Local Motion amongst the Parts of Matter, that by his ordinary Concourse, the Parts of the Universe once compleated, should continue the Oeconomy of the Universe, and propagate the Species of Living Creatures; so that God's Omnipotent Power and Infinite Wisdom concurred to compleat the Form of the Universe, according to those compleat *Ideas*, he had determined them to conform to. And upon another occasion he says; The Divine Author of the Universe hath formed it so admirably, and not only contrived it's Structure, but settled such constant Laws amongst it's Parts, as were most convenient for such a Fabrick as the Universe, and hath given the particular Parts of it such a Subordination in reference to one another, and the Original Fabrick of the System

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of the World, that the Welfare of particular Parts of it should be so far provided for, as was consistent with the General Laws of the Universe, and such Ends as he proposed more considerable than the Welfare of Particular Creatures. Upon which considerations not to mention Miracles which are supernatural, nor those Instances, where the Providence of God does particularly interpose, it may be reasonably said, that God having an Infinite Understanding, clearly discerned the consequences of those Laws he had made, in respect of all Conjunctions, and consequent Circumstances, and having settled standing Laws of Motion, suitable to his wise Ends, it was agreeable to his Wisdom to prefer Catholick Laws before Subordinate Ones, and Uniformity in his Conduct, before Alterations according to particular Emergences. And consequently, he recedes not from General Laws wisely established, to serve particular Creatures, or to prevent seeming Irregularities, which he foresaw would happen, and thought fit to ordain and permit, not unsuitable to some Physical Moral or Political Ends he had in view; so that several things which to us seem Anamolous, were congruous enough to his secret Ends, and therefore not to be censured by us. From whence it appears, what Settled and Rational Notions Mr Boyle had of a God; which is confirmed by several Passages dispersed in other Parts of his Writings, which since they may serve to illustrate the Authors Sentiments of a God and his Attributes, we think it not unreasonable on this occasion to take Notice of them.

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Since then God Almighty's Works are Proofs of his Existence, we shall further observe, what the Honourable Author hath elsewhere said on this Subject, making use of his Expressions, without taking Notice of the particular Occasions, since that would be too tedious; we shall therefore only hint, that speaking of *Final Causes*, he expresses himself to this Purpose; the Excellent Contrivance of the System of the World, the Curious Fabrick of Human Bodies, the Uses of their Sensories and other Parts have always been strong Arguments of the Existence of a Deity, who made those admirable Structures. And in another Place, he says, that several Parts of the World, which we have not made use of, may be of advantage to a Rational Creature, who by contemplating the Works of God, may elevate his Mind in the Acknowledgments, and produce the Sentiments of Gratitude, Veneration and Love. Another Instance of his Belief of a God, we shall take out his *Excellency of the Mechanical Philosophy*, which is, that God first gave Motion to Matter, and so guided their Parts, that they might convene into a World according to his design, and established such Laws of Motion as are commonly called the Laws of Nature. So that the Universe being once formed by God, and the Laws of Motion being settled and continued by the Concourse of Divine Providence, all *Phænomena* are Physically produced by the Mechanical Affections of Matter.

To evince further the Existence of a God, he says, If we consider the Vastness, Beauty and regular Motions of Celestial Bodies, the Admi-

erable Structure of Animals and Plants, and a Multitude of other *Phænomena* of Nature, and how they are subservient to Mankind, they are sufficient to perswade a Rational Creature, that so vast beautiful and regular a System, and so admirably contrived a Structure as the World, owed it's Origin to an Author Supremely Powerful Wise and Good. The Generality of Philosophers and Contemplative Men in almost all Ages and Countries, considering the various *Phænomena* of the Universe, were perswaded of the Existence of a God, thinking it Irrational to subscribe so wisely contrived a Fabrick to the Accidental Cause of Blind Chance. And further, it is not a slight Survey, but a diligent and skillful Search into the Works of God, that will be sufficient to engage a Man, by a Rational and Effectual Conviction to acknowledg with the Prophet, *The Author of the Universe is Wonderful in Counsel and Excellent in Working* Isa. 28. 29.

But not to mention all those Passages in which he hath expressed the Existence of God, he hath sufficiently demonstrated his Faith in that Particular, not only by Expressions but whole Treatises, in which he hath traced the Footsteps of the Divine Artificer through most of his Visible Works, whence it appears, that God was not only in his Faith but in all his Thoughts, nor should we need to mention so many Proofs of his Belief, only that it might have the more lively Influence upon those that perhaps are less apt to follow so Good an Example.

Thus much being said in respect of his Belief of a God, we shall next proceed to take a small View of what he hath said of Providence, and some other of his Attributes, which he not only diligently Observed, but as reverently Expressed on all Occasions; and not only carried it in the *Motto* of his Arms, but acknowledged it in all his Works; and was on several signal Occasions an Instrument of it, in dispensing freely those Benefits to his Fellow Creatures, which God Almighty had bestowed on him. But of this elsewhere, we shall here proceed to enumerate some Exemplary Instances of his Proofs and Acknowledgments of Divine Providence. The first Instance we shall offer is, That one who searches deep into the Nature of things, and observes the Excellent Fabrick of the World, the Variety of Creatures that compose it, and the excellent Contrivance especially of it's animated Parts, their admirable Coordinations and Subordinations, the Vastness, scarce conceivable Swiftmess, and yet Constant, Regular and Various Motions of the Sun, Moon, and other Celestial Bodies; if he further considers, how the Magnetism of the Earth preserves it's Poles, and disposes them to look the same way, notwithstanding the Motions of the fluid Parts of it's Vortex; how by it's Vertical Motion running round every twenty four Hours, it receives the advantage of the Sun and it's Light, and of all the Constellations of the Firmament, as if the whole Celestial Region moved about it; how by the situation of it, it continues the regular Vicissitudes of Night and Day, Summer

and Winter, &c. how the several Parts of the Sublunary World are subservient to one another, as well as to Mankind; how curiously the Bodies of Animals are contrived; what different and convenient Provision is made for different Animals, to subsist according to the Institution of Nature, by enabling them as their Natures differ, some being endowed with strength to take their Food by force, others with subtlety to procure it with subtlety, some with Arms, as Horns to defend themselves or offend their Enemies, some with Wings or Swiftneſs to fly from Danger; others with Fore-sight to prevent them; others with subtle Craft to elude them; how each is distinguished into two Sexes, and endowed with fit Organs to propogate their Species, and skill and kindneſs to nourish them up, till they are able to help themselves: how Wonderful and Curious the Progreſs is in the formation of a Fætuſ; how ſeveral Animals are endowed with different Inſtincts, which ſeem in their Effects to outdo the Efforts of Reaſon, though added to the Mechanical Structure of the Animal, and argues a reſpect to things remote from it, as to Time, Place or both; and perhaps to the grand Fabrick of the World, and the general Oeconomy of Nature; if theſe things, I ſay, are conſidered, it will be reaſonable to conclude, that the Wiſe Author of it would not neglect ſo great a Work, but would ſtill Maintain and Preſerve it, regulating the ſwift Motions of ſuch ſtupendious great Globes, and great Maſſes of Matter, leſt by any Irregularity, they ſhould diſorder the System of the Univerſe.

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And as it is not out of the Power of the Divine Author to preserve and govern his own Works; so he thinks it not below his Dignity and Majesty to extend his Care to the meanest of his Creatures, providing not only for the Nourishment, but also the Propagation of Spiders and Ants themselves. And since the Truth of the Assertion, *That God governs the World he hath made*, appears from the Constancy, regular and rapid Motions of Celestial Bodies, as well as the Artful and Necessary Propagation of all Sorts of Animals, God's Providence may well extend to the Noblest of his Creatures, Mankind. And further speaking of the Notion of the Creation just above proposed, and which we offered as an Instance of his Belief of a God, he subjoins, The Notion we have of the Course of Things, and their Causes are much more consistent, with the supernatural and extraordinary Interpositions of Divine Providence; for when God Almighty is pleased to over-rule the ordinary Course of Things by his Omnipotent Hand, such things may more easily be acknowledged miraculous, by those who allow the Effects of Matter and Motion, &c. And in another place he asserts, that God's Providence may easily be asserted upon proper and solid Grounds; as the Infinite Perfections of the Divine Nature, which enables him to govern the World, he hath made and supports: The exquisite Contrivance of Men's Bodies requiring Stupendious Wisdom; the Supernatural Revelations made of himself, and his Care of his Creatures, by Prophecies, Apparitions

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and Miracles, above the Power, and contrary to the Laws of Motion in Matter. Another Instance of his Acknowledgment of Divine Providence is, that God declares in Scripture, that *he Cursed the Ground on Earth for Man's sake*, and that there is no penal evil in the City, that is not owing to him. Besides, he is not over-ruled by the Motions of Matter, but overrules the established Laws of Motion to execute his Justice, as in Earthquakes, Plagues, &c. to deprive wicked Men of that Life, and those Blessings, which their Sins had made them unworthy of.

And further, to illustrate God's Providence, he says, that Divine Providence had several Ends in making the World, and the several Creatures that compose it, some of which are hid to us, and others known, some being made for the Manifestation of the Glory of God, others the Usefulness of Man, or the Maintenance of the System of the World, with respect to particular Creatures, or the Propagation of their kinds; so that we ought not presently to deny or censure Divine Providence, though all his Creatures are not equally provided for their safety, or some less than they might be; and though some Anomalies are permitted, which are esteemed mischievous Irregularities, for the good of some particular Creatures, being not the Principal Ends of Gods Creation, it is not to be expected, that he should regard the Welfare of some particular Creatures before the good of Creatures of a Superior Order; so that some things which seem incongruous to Providence, do not only agree with it,

it, but tend to accomplish it's Designs. And as Instances of God's Providence, he takes Notice, that several Persons have been choaked with a Hair, which they could neither catch up nor swallow down, which occasioning an unusual Irritation in the Throat, produces Convulsions to expel it. But if we reflect on the Usefulness of Deglutition, and in some Cases of Coughing and Vomiting, it is requisite that the Parts should be irritated, by the sudden Sense of unusual things, this being consistent with God's Providence, who in making Provision for the Welfare of Animals, regards more what usually befalls them, according to the regular Course, than extraordinary Cases, or unusual and less frequent Accidents.

But to Illustrate Mr. Boyle's Notion of Providence further, we shall add, what he hath said in respect of Critical Discharges of distempered Humours, to this Purpose. We are therefore to consider, that the wise Author of things so skilfully contrived the Body of Man, that were there in it an Intelligent Principle of self Preservation, things could not be better contrived for it's Preservation than they are, so that we question not the Wisdom and Providence exercised in such Cases, but upon what Account they are performed: Most Physicians think the Intelligent Principle *Nature*, being careful of the Patients Welfare, watches an Opportunity of expelling it, distressed with the Quantity of Morbifick Matter. But we attribute it to the Wisdom and Providence of God, exerting it's Power Mechanically, partly by the help of the great Machine the World, and partly by the smaller

smaller Engin a Human Body; and in another Place to the same purpose, he says, though it is my Opinion, that the wise Author of things seldom recedes from the settled Course of the Universe, and the Catholick Laws of Motion, yet his Divine Prudence is often conversant in a peculiar manner about the Actions of Men, and the things that happen to them, and where Men, whom he hath endowed with free Will, are nearly concerned, he hath not only acted in a Supernatural way, by signal and manifest Interpositions, we call Miracles; but as Sovereign Lord and Governour of the World, several times, by the Intervention of Rational Minds, either united or not united to Human Bodies, gives such Determinations to the Motions of Parts in those Bodies, which meerly by Laws Mechanical would not have been, and thus produces either good or bad Crises's; and that Divine Providence interposes in Case of Life and Death, appears in Scripture, which proposes long Life to Obedient Children, as a Reward, and threatens *Bloody and Deceitful Men shall not live out half their Days*. Thus an Impious King of *Israel* had his Disease made Mortal, by having recourse to the God of *Eckron*, and on the contrary, upon *Hezekia's* Prayers and Tears, God was pleased to add fifteen Years to his Life. And elsewhere he says, there may be some general Ends in respect of the whole World, as the Creators exercising his immense Power and Wisdom, the communicating his Goodness, the Admiration and Thanks which are due from Intelligent Creatures,

tures, for those Divine Excellences which manifest his Glory.

And to illustrate his Notion of Providence further, elsewhere he says : The Immense Bulk of Celestial Bodies, as well as the Celerity of their Motions, sufficiently shew his Power and Greatness, as well as his Wisdom and general Providence, having preserved the Regular Course of things so many Ages. And further, in another Place he says, though Man at the first is not able to help himself, or to exercise Dominion over Inferior Creatures, yet God hath contrived, that Parents should have such Natural Affections, as to take care of him, till he is able to take care of himself, and hath acquired Knowledg and Industry to make use of those Advantages that were designed for him.

And further, he says, the Contemplation indeed of the Celestial Part of the World, is sufficient to encourage us, to admire the stupendious Power and Wisdom of the Author of such Immense Bodies, who hath preserved such vast Orbs, in a constant rapid Motion so many Ages, and likewise a regular One. And we ought to return Thanks and Praise, to the Goodness of Divine Providence, who hath continued the Motion of the Sun and Moon under that Oblique Circle of the Eclyptick, it requiring Skill in a Cosmographer to apprehend, how useful the Scituations and Motions are to the good of Men and other Animals.

And though, he brings Physical Instances of God Almighty's Providence, yet he proves it further by the Scriptures ; for, says he, though Philosophy does not, Revelation tells us, that
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the World, and what is contained in it, were designed for the Use of Man, who hath a right to make Use of what he can subdue; and that the Sun and Moon were designed for the Use of Man; and therefore the *Psalmist* might well cry out, *How wonderful are thy Works, O Lord! how wisely hast thou made them all. The Heavens declare the Glory of God and the Firmament sheweth his handy Work.* And further he says, it seems reasonable to think, that God Created Angels before the World, that they might not only see, but praise him for his Productions. And since Angels are of a Nobler Order than Man, as Intelligent Creatures, and are not unconcerned Spectators of the Works of God, who knows, but there is as much contrivance in those Stars, which are only to us as Declarations of their Makers Power, as in our Globe, which may invite their devout Hymns and Acclamations. Nor will God loose the Glory of his Divine Attributer, though the fixed Stars should not be only or principally designed for the service of Men. And as an Instance not only of Gods Supreme Wisdom, but of his own Humility, being unwilling to assert any thing so affirmatively or negatively of what is beyond the Extent of Human Knowledg, he elsewhere says, if it be asked, what the hidden Parts of the Earth and those Stars, which are not to be discerned by the Eye, are made for, if not for the Use of Man, we had much better acknowledg our Ignorance, than to suppose them to be made for a particular End, which appears neither worthy of the Wisdom of God, nor to be attainable by us. And thus much, to

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use Mr. Boyle's Expressions in another place, we have said, to shew the Vanity of those who have more Wit than Philosophy or Piety, and to convince them of, as well as manifest, the admirable Wisdom of God; to which he adds, Boundless Wisdom is an Attribute included in the *Idea* of a Being infinitely perfect, but such a General and Indefinite *Idea* will not give us so much Cause to admire and shew a Veneration for it, as the Knowledg and Considerations of the admirable Contrivance of the particular Productions of that immense Wisdom, and their exquisite aptness for the Ends and Uses they were designed for.

Thus far we have endeavoured to represent, though too faintly, how firmly grounded his Belief was, both of a God and his Providence, and of his high Esteem and Value for those Sacred Writings which he stedfastly believed to be the Word of God, transmitted to us by those Sacred Writers whom he intrusted to reveal his Will to Mankind; I say, having thus briefly offered some Instances of his Exemplary Faith, we should next proceed to speak something of that *Hope*, which might reasonably be grounded upon so entire a Vertue as his Faith manifested it self to be; but we shall defer that till we come towards the Period of that Life, which antecedeth the full Fruition of his Hopes, and crowned them with that Eternal Happiness he now enjoys; we shall therefore in the next Place say something of that other Grand Christian Vertue *Charity*, which he was so eminent for, I mean not his Exemplary only, but that also which was even beyond Example; which

His Christian Charity.

which he exercised in an Eminent Degree, both in Gifts to those in Necessity, and Affections towards his fellow Christians. In the first, he exceeded all of his Rank and Fortune, and what God Almighty had bountifully bestowed on him, he as liberally distributed to relieve the Necessities of his Brethren, and since he was blessed with a plentiful Estate; he made it the greater Blessing, by exchanging his Treasure on Earth, for an Everlasting Treasure in Heaven; nor was he only Charitable to those that stood in need of Temporal Things, but as freely Communicated Spiritual Gifts, and to those who most stood in need of them, being very zealous in promoting Christianity, and the Honour and Glory of God amongst those that were strangers to and unacquainted with the means of Salvation. To use the Words of the Right Reverend and Learned Dr. Burnet, "He was at the Charge of the Translation and Impression of the New Testament into the *Malygan* Language, which he sent over all the *East-Indies*. He gave a Noble Reward to him that translated *Grotius's* incomparable Book of the *Truth of the Christian Religion* into *Arabic*, and was at the Charge of a whole Impression, which he took care to order to be distributed in all the Countries, where that Language is understood. He was resolved to have carried on the Impression of the New Testament in the *Turkish* Language; but the Company thought it became them to be the Doers of it, & so suffered him only to give a large share towards it; so that as our Saviour ordered his Disciples to go and teach all Nations, he did

the Office of a great many Disciples, in spreading God Almighty's Declarations in known Languages, where Christianity was unknown.

But to proceed to his other Acts of Charity of this kind; "He was at seven hundred Pounds charge in the Edition of the *Irish Bible*, which he ordered to be distributed in *Ireland*, and he contributed largely both to the Impressions of the *Welsh Bible*, and of the *Irish Bible in Scotland*. He gave during his Life three hundred Pounds to advance the design of propagating the Christian Religion in *America*; and as soon as he heard, that the *East India Company* were entertaining Propositions for the like design in the East, he presently sent an hundred pounds for a Beginning and an Example, but intended to carry it much further; when it should be set on foot to purpose. Thus his Zeal was Lively and Effectual in the greatest concerns of Religion; but he avoided to enter far into the unhappy Breaches that have so long weakned, as well as distracted Christianity, any otherwise than to have a great Aversion to all those Opinions and Practices, that seemed to him to destroy Morality and Charity. And if amongst the *Romans*, he was thought worthy of a Crown of Distinction, that saved the Life of a Citizen, what an Immortal Crown of Glory must his Merits deserve who promoted the Salvation of so many Thousands of Souls, and propagated Christianity amongst so many People and so many Countries. How joyfully would he be received amongst the Saints who had contributed

tributed so much to the Increase of Piety, and what Joy did he promote in Heaven, who had brought such a Multitude to Conversion.

And as his Charity was extensive to his fellow Creatures in General, in his Life time; so he not only Lives after Death in the pious Memory of all Good Christians, but continues his Acts of Kindness in promoting Christianity, whilst his Body lyes in deep silence in the Grave; and as our Saviour before he left the World commanded his Disciples to teach all Nations, he following so Good and Great an Example, was a very notable and lively Pattern of Imitation, encouraging those Successors of his Disciples, to prosecute so good a Work, particularly in the Metropolis where he lived; "He had therefore designed, though some Accidents did upon great considerations, divert him from settling it during his Life, but not from ordering it by his Will, that a liberal Provision should be made for one, who should in a very few well digested Sermons, every Year set forth the Truth of the Christian Religion, in General, without descending to the Subdivisions amongst Christians; and who should be changed every third Year, that so this Noble Study and Employment might pass through many Hands, by which means many might become Masters of the Argument. Thus he contrived that the Preachers of the Gospel should not only be encouraged to instruct those committed to their Care, but that by teaching they should become wiser themselves, and edify their own Souls as well as those of their Hearers.

To

To these Instances of his Publick Charity, we shall add another, which is not only an Eminent Instance of it, but likewise shewed his Respect and Value for the Clergy. "When he understood what a share he had in Impropriations, he ordered very large Gifts to be made to the Incumbents in those Parishes, and to the Widows of such as had dyed before he had resolved on this Charity. The Summs that as I have been informed, by one that was concerned in two Distributions that were made, Amounted upon those two occasions to near six hundred Pounds, and another very Liberal one is also ordered by his Will, but in an indefinite Summ, I suppose, by Reason of the present Condition of Estates in *Ireland*; so plentifully did he supply those who served at the Altar, out of that which was once devoted to it, though it be now converted to a Temporal Estate. So that he had so much regard for those that communicated Spiritual things, that he deprived them not of that Temporal Reward, which might be necessary to support them in the Performance of their sacred Function.

Thus far we have considered those Publick Acts of Charity, which have had so great and good Effects on a large Part of Mankind; we shall next take Notice of those Private Acts of Charity, which he endeavoured to conceal from the World, especially from those who received the advantage of his Liberality, and on this Occasion we shall make Use of the Account given by the Learned Bishop *Burnet*, in these Words. "His Charity to those that were

‘ in want, and his Bounty to all Learned Men,
‘ that were put to wrastle with Difficulties,
‘ were so very Extraordinary, and so many did
‘ partake of them, that I may spend little time
‘ on this Article. Great Summs went easily
‘ from him, without the Partialities of Sect,
‘ Country or Relations ; for he considered him-
‘ self as part of the Human Nature, and as a
‘ Debter to the whole Race of Men. He took
‘ care to do this so secretly, that even those who
‘ knew all his other concerns, could never find
‘ out what he did that way ; and indeed he
‘ was so strict to our Saviours Precept, that ex-
‘ cept the Persons themselves or some one, whom
‘ he trusted to convey it to them ; no Body e-
‘ ver knew, how that great share of his Estate,
‘ which went away invisibly, was distributed ;
‘ even he himself kept no Account of it ; for
‘ that he thought might fall into other Hands. I
‘ speak upon full Knowledg on this Article,
‘ because I had the Honour to be often made
‘ use of by him in it. If those that have fled
‘ hither from the Persecutions of *France*, or from
‘ the Calamities of *Ireland*, feel a sensible sink-
‘ ing of their secret supplys, with which they
‘ were often furnished without knowing from
‘ whence they came ; they will conclude, that
‘ they have lost not only a Purse, but an Estate
‘ that went so very liberally amongst them,
‘ that I have Reason to say ; that for some
‘ Years his Charity went beyond a Thousand
‘ Pounds a Year.

He had another most Excellent Branch of
Christian Charity, which we have in some
Measure hinted before, and which we shall
hereafter

hereafter have occasion to mention more fully, viz. His Charitable Opinion of Persons of other Perswasions, and to use Bishop Burnet's Expressions; "He loved no narrow Thoughts, nor Low or Superstitious Opinions in Religion, and therefore as he did not shut himself up within a Party, so neither did he shut any Party out from him. And as our Saviour commanded his Disciple to put up his Sword when he drew it in the Defence of his Master, and smote the Ear of the Servant of the High-Priest, and healed the Wound he had made, so the Honourable Mr. Boyle was against all violent Means to defend Religion, or oppose adverse Opinions; "He had a most peculiar Zeal against all Severities, and Persecutions upon the Account of Religion, says Dr. Burnet, to which he adds, I have seldom observed him to speak, with more Heat and Indignation, than when that came in his way.

Having thus far gone through those Grand Christian Vertues, Faith, Hope and Charity, which he so eminently Illustrated both in his Life & Publick Writings; the Second of which we shall more fully consider hereafter, we should in the next place proceed to take Notice, how exact he was in other Christian and Moral Vertues, but before we engage in those, we think it not amiss if we take notice, how sincerely and strictly he observed those two great Commands, which oblige us both to Love God, and our Neighbours.

And First, as it appears from what we have said, how firm he was in his Faith and the Exercise of his Charity, so he was no less remarkable and worthy of Praise and Imitation in the Ex-

His Christianity further evinced.

By his Duty to God.

ercise of these other Christian Duties ; and as nothing can more plainly demonstrate our Love to God, than a compliance with his Will in serving and obeying him, so none could more Pathetical express their Love to God than he did, nor give greater Proofs of their Service and Obedience. As Dr. Burnet observes ; “ He
‘ was most constant and serious in his Secret
‘ Addresses to God ; and indeed it appeared to
‘ those that conversed most with him in his En-
‘ quiries into Nature, that his main design
‘ in that was, to raise in himself and others,
‘ vaster Thoughts of the Greatness and Glory
‘ of the Wisdom and Goodness of God. And
as he was constant in his private Devotion, so he publicly expresses his Satisfaction in Adoring the Author of the Universe ; for, says he, I think my time well employed, If I can contribute to raise a just Admiration and Veneration for God, which can never be great enough, since the more we know and adore his Infinite Excellency, the greater Influence and more Advantage we find by it ; as God is introduced saying, *because he hath set his Love upon me, therefore will I deliver him, I will set him on high, because he hath known my Name.* And elsewhere he says, If I consider the Excellency of God’s Privileges, I cannot but wonder as well as be concerned, that Rational Men who are Christians, should wilfully and contemptuously neglect those Notices, which might increase their Knowledge of God, and consequently that Veneration that is due to him, it contributing both to Men’s Happiness and Duty, to seek after the Knowledge of God, that they might
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adore him: God who endowed Men with an innate Desire of Knowledge, and a Power to distinguish and chuse the best Informations of his Excellency, and hath made it his Duty to search after God, and to Love him, did this, that Man might find him the worthiest Object of his Understanding, as well as Wonder and Veneration. And again, it ought to be both the Intent and Result of our Admiration of God, to raise more worthy *Ideas*, and more Honourable and Reverend Thoughts of a Being so wonderful and beyond a Parallel, whom the more we apprehend, the more we find him Superior to his Works, especially our selves, who are not of the highest Order, but meer Men, and no more Noble, than as capable and permitted to know, admire and adore God; which he that esteems a slight and regardless Employment, would be unqualified to find Happiness in Heaven, tho' admitted there.

But further, he had so profound a Respect for God Almighty, and Reverenced his infinite Majesty so much, that he never thought we could sufficiently Love and Praise him, says he, We are so little inclined to cherish an awful Veneration for God, either for want of Thought, or through Vice, Prejudices, and the Sublimity of the Subject, which requires a studious contemplation to discover his adorable Attributes, that it requires both a great many Arguments, as well as frequent Inculcations, to imprint them upon Men's Minds, before they will be brought to an Exercise they are unacquainted with, or not willing to be so; and further he says, Human Reason is but small and dull in respect of

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that *Fountain* as well as *Father of Light*, and is often darkned with Lusts and Passions, or a suspension of the Influence of God Almighty's Beams and at the best is blemished with Imperfections. Therefore we ought to be very circumspect, when we make Philosophical Enquiries, or dispute about God, especially when we design to praise him; for when we speak of God, we ought to say, what is worthy of God, as well as true; our *Ideas* however so great, will rather express the Greatness of our Veneration, than the Immensity of his Perfections; and the Notions worthy the most intelligent Men, are far short of being worthy the Incomprehensible God, the brightest *Ideas* we can frame of God, being infinitely inferior, and no more than a *Parhelion* in respect of the Sun. He therefore hath the truest Veneration for God, who represents his Excellences and Perfections in the most Noble Expressions, and through a Sense of his own Inferiority hath the best *Ideas* of the Perfections of his Maker. And if our Hymns and Praises of that Supreme Being deserves our Blushes, and stand in need of his Pardon, their Faces will one Day be covered with strange Confusion, who not only speak slightly and confusedly, but contemptuously and drollingly of that infinitely perfect and supreme Being, who impiously and ungratefully misemploy those Faculties and Wit he bestowed upon them for better Purposes. From whence it appears, that he not only had the highest Veneration and Love for God, but thought the best Services below what the Dignity and Worthiness of God might deserve from us.

And

And to make us still more mindful of our Duty to God, not only as we ought to love and admire his infinite Perfections, but also proportion our reasonable Service, he further says, we have but a dim and shallow Knowledge of those Attributes of his, *viz.* His Wisdom and Power, and may discern, that there is an unbounded Extent of Perfection, beyond our Abilities to perceive, and therefore such imperfect Creatures ought not to talk hastily and confidently of God, considering our inestimable Inferiority to such a Being; and therefore our Ignorance ought to teach us Devotion, that Ignorance proceeding from the Number and Incomprehensibleness of his Excellences, so that our Knowledge only helps us the more to admire his Perfections. And elsewhere, to shew how much we ought in Duty to praise and admire God, he says, those Intellectual Beings, the Angels, though their Minds are illuminated with extensive Knowledge, are desirous to pry into the Mysteries of the Gospel; whence it appears, they are far from prying into the Depths of God, or from comprehending his Nature. And thus in the Majestick Vision before *Isaiab*, they are represented as Attendants about God's Throne *covering their Faces with their Wings*, as not able to behold the Brightness of his Majesty. How then shall we Mortals, infinitely beneath him, degenerated by Sin, and the Imperfections of our inferior Nature, talk irreverently of the Divine Essence and Perfections, not regarding the immense difference betwixt God and Us, being unable to search into his adorable

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Nature.

Nature. We had much better with the *Psalmist* confess, *such Knowledge is too wonderful for me, it is high, I cannot attain unto it,* and celebrate that God, whose *Glorious Name is exalted above all Blessing and Praise.*

To represent further our Duty towards God, and to move us to the Practice of it, he says elsewhere, God's Attributes might yet further appear worthy of our Esteem and Veneration, should we consider besides his Wisdom and Power, his other Perfections, as his Goodness to all Creatures, his Mercy, Justice, Veracity, &c. besides he may have several Attributes and Perfections, which we know not of, nor can so much as guess at, the Fecundity of the Divine Nature being so inexhaustible, and the Productions of an Almighty Power, being attended with Infinite Wisdom, which his exuberant Goodness is pleased to communicate. And further, by the *Idea* we have of him, and some of the Attributes we know he hath, we may be induced to believe, that he hath other Perfections that we know not of; for not to mention those irrelative ones, as his Self-Existence, Eternity, Simplicity and Independency, which we know by considering him as an absolutely perfect Being, he hath relative Perfections which we come to the Knowledge of, by Experience, of what he hath done for his Creatures. As God's Mercy was unknown to *Adam* before his Fall, and his Fidelity in respect of the Promises of the *Messias* before the *fulnesh of Time*, in which they were fulfilled. Since therefore God's Perfections respect the Natures and Conditions of his Creatures, and
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their Actions towards him, as well as his towards them, and we know not but he hath several Creatures, and hath several Relations towards them, according to their Conditions, he may have Attributes in respect of them we know not of. But let the Attributes we know, or do not, be what they will, such Divine Perfections must flow from a most glorious Majesty, whose Intelligent Works ought to pay him the highest Veneration; for this Reason, Angels, who are the most Excellent of his Creatures, are represented as always employed, both in obeying and serving, as well as praising and adoring the Divine Majesty. And our Saviour in his prescribed Form of Prayer, tells us, that the Will of God is done in Heaven, since he proposes the Imitation of it here on Earth; and though Angels affect the most Excellent Persons in their glorious Appearance, with Amazement, if not Terror, and force their Veneration, their Presence being accompanied with a surprizing Splendor, so that one of them is represented as *Enlightning the Earth with his Glory*, and though they are so Numerous, that we are told of *Millions, Legions, Thousand Thousands, and ten Thousand times ten Thousand of them*, yet these Glorious and Celestial Courtiers, who are Intelligent and Spotless, stand about the Throne of God, not to Gaze but Minister, covering their Faces before their Maker, elevated on the Throne. And that they adore and celebrate his Majesty is evident, since they cry to one another, *Holy, Holy, Holy, is the Lord God of Hosts, the whole Earth is full of his Glory*. So that it is not to be wondered, that
Angels

Angels should shew that profound Respect, since the greater their Knowledg is, the greater Veneration will be had by an Intelligent Being. And though Angels have Prerogatives above Men, yet they are Creatures infinitely inferior to God. And since the Angels shew so much Reverence to the Supreme Being, *who are greater in Power and Might than we*, as they are proposed for our Imitation, they ought to put us in Mind, what Ecstatick Respect we owe him, and when ever we speak to, or of him, we ought to consider the vast difference betwixt our most perfect and omnipotent Creator, and an impotent Creature, a most holy God, and a sinful Man.

But to shew more expressly, that he not only thought it our Duty to Love and Adore, but also to Obey God, he says, when any thing is commanded by the Scriptures, being conscious, that it is the Will of that *Father of Spirits*, I dispute not to obey his Orders; — God's Will being no where to be better Learned than where it is Revealed.

And as a further Motive to the Worship as well as the Belief of a God, he says, in another place, The Works of God retain on their very Surface, the manifest Impressions of the Wisdom and Goodness of their Author, besides a great many more curious and excellent Tokens and Effects of his Divine Artifice in their obscure and innermost Recesses, which are not to be discovered by the superficial and careless Inspection of superficial Beholders, but require and deserve the utmost Attention of a curious and inquisitive as well as skilful Inspector; and

in one single Creature, there are several admirable *Phænomena*, which though they escape the Eyes of the Vulgar, may apparently be discerned by a true Naturalist, who besides Curiosity and Attention, hath acquired a competent Knowledge in Anatomy, Opticks, Cosmography, Mechanics and Chymistry; for God Almighty hath comprized so many things in his visible Works, that the clearer the Light of a Man's Understanding is, the more he will be capable of discovering the Exquisiteness of those that are less obvious, and will more distinctly and clearly discern the Qualities of what are most apparent; and the more wonderful Discoveries he makes in the Works of Nature, and the several Parts of the Universe, he will be furnished and assisted with the stronger Proofs and Arguments, to demonstrate *that there is a God*, which is so weighty and important a Proposition, that it ought to make us eager in the pursuit of whatever may confirm us in the Belief of it, and furnish us with Motives to acknowledg and adore the Divine Author of the Universe.

On this Occasion to shew, how indispensably our Duty of Worship and Obedience is owing to God, in his Opinion, Mr. Boyle tells us, that since Man is endowed with Reason to tell him, that God is both his Maker and continual Benefactor, and that consequently, he may justly require and expect both Worship and Obedience; and since the same Rational Faculty may tell him, that it may well become the Majesty and Wisdom of God, as the Sovereign of the World, to prescribe Laws to

to his Creatures, who are capable of Understanding, as well as of Obeying them, and glorifying their Author; and further, since his own Mind, if not vitiated, will convince him, that he owes a Veneration for the Author of his Being, and his continual Benefactor; and since his Conscience upon these Accounts will convince him, that he owes all the Duties of Natural Religion; and since further, his Reason will tell him, that his Soul is immortal, and therefore capable, as well as desirous, to be everlastingly happy, he must consequently be desirous of a supernatural Discovery of what God would have him believe or do. And therefore if he shall be informed by supernatural Revelation, what manner of Worship and Obedience would be most acceptable to him; and God shall encourage him by Promises of that Felicity to both of them; he cannot but acknowledge such Proceedings, becoming the Transcendent Goodness of God, without any Derogation from his Majesty and Wisdom, — and further, since God hath vouchsafed to Man an explicate and positive Law, threatening stubborn Transgressors with severe Penalties, and offering Rewards to the sincere Obeyers of his Will, suitable to his own greatness and goodness; thus the consideration of God's Providence in the dispensation of Corporeal Things may dispose a well inclined Contemplator, and be his rational Guide, from Natural to Revealed Religion; which comprises our Duty towards God as well as our Neighbour.

And to excite us further to the Duty of Serving and Praising God, he urges the Example
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of Angels; who, though God made them Immortal, and not to propagate their Species; and as the Scripture informs us, though they reside in Heaven, enjoying the sight of God, yet are they constantly praising and obeying him without sinning against him. And though splendid and Majestick in their Appearance, yet are ministring Spirits, for the good of the Heirs of Salvation, and refuse to be adored by Men, exhorting them to pay it to God.

And to direct us the better, in order to our Duty to God, he says, the Mysteries in Scripture have always had a good Effect upon the Contemplators of them: but he that hath a deeper Knowledge of God's Wisdom and Goodness, will more Admire, and Love, and Trust in him, which Disposition of Mind, is a great Part of the Worship of God, and promotes those Vertues without which we can neither obey God, nor manifest our Love to him.

And to shew us further by Example, how we ought to inform our selves of our Duty towards God, he tells us, that it is the Will and Command of God, to learn those Truths he hath been pleased to teach, either in respect of his Nature or Attributes, or the ways he would be worshipped in, will easily appear; for not to mention the Injunctions of Scriptures, our Reason will tell us, that we ought to pursue what he hath ordered to be taught us, as far as our Capacities or Opportunities will admit, and if it be the Will of God we should search after Truth; it must consequently be our Duty; for though the Nature of the Subject would not, God's Commands would lay

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an Obligation on us ; for as he is Supreme Lord of all his Creatures, he hath both a full Right to make what Laws he pleases, as well as enjoyn what Services he thinks fit ; and punish those who violate the one or deny the other. And thus *Adam* before his Transgression had a Law imposed, which was obliging, because the Will and Pleasure of him that gave it ; so that Man seems to be Subject to the Laws of God, not as obnoxious to him, but as a Rational Creature, and things become a Duty by being commanded, which were not so in their own Nature. And if *Adam* in his State of Innocency, when he was happy and tasted of God's Bounty, without wanting his Mercy, was, by Obedience, obliged to conform to a Law indifferent of it self, we in our fallen Condition ought to be obedient to his Will, and to study his Truths, and to pursue such things as have Intrinsic Goodness ; so that it would be a Duty, though not commanded, besides the Recompence which makes it an Advantage. And further, says he, how pleasing Men's Praises are to God appears from what is said by the Royal Poet ; who was a *Man*, after *God's* own Heart, who introduces God saying, *who so offereth Praise Glorifieth me*. And in another Place he says, as admiring the Nature and Providence of God, and contemplating the Mysteries of Religion, are the greatest Homages and Services by which we can venerate and obey God, so the Recompence is proportionable, viz. the Enjoyment of himself Saints and Angels have been Messengers of the Truth of Divinity, and they have been solicitous to dive into those sa-

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cred Mysteries, and God hath said, that those that employ themselves in such Studies here, shall practise the same in Heaven.

Thus much may sufficiently shew the profound Veneration, Mr. Boyle had for God Almighty, and how much he thought it our Duty to Worship and Adore, and to serve and obey him. Nor was he less wanting in his Duty towards his Neighbour, which appears from what hath been already said of his Charity, both in respect of Spiritual and Temporal Gifts, and his Christian Charity upon other occasions; and will further appear, from what will be said hereafter upon other Accounts; yet we shall here upon this occasion take Notice, of what the Honourable Mr. Boyle hath said in a Similar Case; for speaking of the Love of God, and ordinary Love, he says, though there are certain Degrees of Love for a Friend, a Mistress or a Wife; yet there is a peculiar Temperament of Love, which justly belongs to God; and elsewhere, he says, that though some Persons have been blamed for too much Devotion, the want of Discretion, not the Excess of Love was guilty of their Faults. Our Love to God ought to be regulated by his Revealed Will, and not our wild Fancies, *If you Love me keep my Commandments*, says Christ, and therefore it is possible to be too devout, not that any Expressions of Love towards God can be too Ardent considered abstractly, and irrelatively to the rest; but because there are several Duties of Love, which require an Ardency, so that it is injurious to exercise all our Love upon that alone, which belongs to other neglected

By his Duty towards his Neighbour.

neglected Objects. We are not to dash the two Tables of the Law one against another, but *must Love God with all our Hearts*, and yet we must *Love our Neighbour as our selves*, and elsewhere he says, our Love to the Creature is a Present, but to God it is a Tribute; and though we may be easily too prodigal in parting with our Gifts, we cannot be easily so in paying our Debts, Acts of Justice being no Profuseness; so that the Honourable Mr. Boyle shews us, how we ought to regulate our Love, giving a due share to our Neighbour, but the greatest to the most Worthy Object of it. And to shew us, how much more worthy of our Love God Almighty is than any other Object, he thus represents the Inducements we have, that no other Object should divert us from paying that Duty to God Almighty. Says he, the Excellency and Prerogative of Divine Nature, makes our Love due to God, though in celebrating God's Perfections, I am sensible I shall rather detract from what I would Praise, the Subject being so high that *Seraphims* themselves would come short in doing it right. And if these things never fell within the reach of our Senses, nor entered into the Thoughts of Men, which God hath reserved for those that Love him, how incomprehensible must those things be, which he hath reserved for himself.

*His Religi-
on.*

Having thus far traced Mr. Boyle through those Grand Christian Vertues, *Faith, Hope and Charity*, and those other two Grand Christian Duties and Commands, *viz. Our Duty to God*, and to our Neighbour, and shewn how Just and Christian like his Sentiments were of them;

which

which he to the highest Degree Practised in his Life, we should next proceed to those other Moral Vertues which he no less excelled in; but since these last mentioned peculiarly belong to a Christian, and are the Basis of the Christian Religion; before we proceed further, we shall represent what kind of a Christian he was; we mean of what Sect or Perswasion or in what Communion he professed his Faith; for though he adhered to a particular Profession in Religion, yet he was far from being of any Party; his Religion being founded upon a true Basis, and good Principles; and the Intent and Aim of it being not the Acquist of Temporal Advantage, but a pious Disposition to pursue the means of Salvation, and to merit that Eternal Felicity which he now enjoys; he courted not the Transitory Vanities of this World; but had a respect to that *Recompence of Reward*, which God hath promised to those that patiently persevere in well doing unto the End. As to the Religion he professed and adhered to, to these Words of the Learned Dr. Burnet Bishop of *Sarum* "He did thoroughly agree with the Doctrins of our Church, and conform to our Worship; and he approved of the main of our Constitution, but he much lamented some abuses that he thought remain'd still amongst us. He gave Eminent Instances of his Value for the Clergy. He was constant to the Church; and went to no separate Assemblies; how Charitably soever he might think of their Persons, and how plentifully soever he might have relieved their necessities. In which he followed our Saviours Example, who when his Disciples came and told him, that others

cast out Devils in his Name, he ordered them, they should not forbid them, *since those that gather with us are not against us.*

And as in his *Seraphick Love*, he Uses the Disinterestedness of God's Love to Us, as a Motive to our Love of God. His design being only to make us Instruments and Partakers of his Glory, and to make us happy, a way that both Elevates and Dignifies our Natures, & prepares Christians for that higher State of Blessedness, reserved by God for those that Love him, it's value being heightened by the Vertues and Graces given Men on Earth; so Mr. *Boyle's* Religion and Christianity were Disinterested in respect of Temporal Advantages, and only Studied and Improved his Vertues and Graces on this side the Grave; that he might enjoy the blessed Hopes here, and the full Fruition hereafter, of those Joys and Eternal Blissess, which are the Rewards of a *Fight* so well Fought, and a *Course* so well Finished, viz. an Everlasting Crown of Glory: so that he might well say with the Apostle. *I press towards the Mark for the Prize of the high Calling of God in Christ Jesus*, Phil. 3. 14.

But to shew more plainly, and to illustrate the Disinterestedness of his Religion and other Vertues which added a Lustre to his Christian Character, we shall add, what Dr. *Barnet* says upon this occasion, which the Right Reverend Father in God brings as an Instance of his value for the Clergy, and his Sense of the sacred Functions; "Soon after the Restoration in the Year Sixty, the great Minister of that time pressed him both by himself, and by another, who was then likewise in a high Post, to enter into Orders. He did it not meerly out of a Respect

‘Respect to him and his Family, but chiefly out
‘of his regard to the Church; that he thought
‘would receive a great Strengthening, as well
‘as Powerful Example from one, who, if he
‘once entered into Holy Orders, would
‘be quickly at the Top. This he told me
‘made some Impressions on him. His Mind
‘was even then at three and thirty, so intirely
‘disengaged from all the Projects and Concerns
‘of this World, that as the Prospect of Dig-
‘nity in the Church, could not move him much,
‘so the Probabilities of doing good in it, was
‘much the stronger Motive. Two things de-
‘termined him against it; one was, that his
‘having no other Interests, with Relation to
‘Religion, besides those of saving his own Soul;
‘gave him, as he thought, a more unsuspected
‘Authority, in Writing or Acting on that side.
‘He knew the Prophane Crew fortified them-
‘selves against all that was said by Men of our
‘Profession, with this, that it was their Trade;
‘and that they were paid for it: He hoped
‘therefore that he might have the more Influ-
‘ence, the less he shared in the Patrimony of
‘the Church. But his main Reason was, that
‘he had so high a Sense of the Obligations of
‘the Pastoral Care; and of such as watch over
‘those Souls which *Christ purchased with his own*
‘*Blood*, and for which they must give an Ac-
‘count, at the Last and Great Day, that he
‘durst not undertake it, especially not having
‘felt within himself an *Inward Motion to it by the*
‘*Holy Ghost*. And the first Question, that is put
‘to those who come to be initiated into the
‘Service of the Church, relating to that *Motion*;
‘g 2 he

‘ he who had not felt it, thought he durst not
 ‘ make that step, lest otherwise he should have
 ‘ lyed to the Holy Ghost ; so solemnly and seri-
 ‘ ously did he Judg of Sacred Matters. Thus
 though he did all he could, both by Example
 and Writing, to promote Christianity, he
 sought no other Advantage but the Reward of
 a good Conscience. He esteemed the Reward
 in Heaven, above all the Honours and Digni-
 ties here on Earth ; but of this elsewhere,
 so that he might say with the Apostle,
Let us therefore Fear, lest a Promise being made
us of entering into his Rest ; any of you should seem
to come short of it. Heb. 4. 1: so that he con-
 temned the Superfluities of this World ; laying
 up in store for himself, a good Foundation against
 the time to come, that he might lay hold on Eter-
 nal Life, 1 Tim. 6. 19. and took care to make
 himself one of the Number of them, who by Pati-
 ent Continuance in well doing, seek for Glory,
 and Immortality, and Eternal Life, Rom. 2.
 17.

*His Modesty
 in his Opini-
 ons of
 Things and
 Persons ;*

But to proceed to those other Vertues, which
 were signally entertained in his Mind and as e-
 vidently Praised, and were Ornamental to
 him both as a Christian and a Philosopher, and
 first, to make use of the Right Reverend Dr.
 Burnet’s Words ; “ He had brought his Mind
 ‘ to such a freedom, that he was not apt to be
 ‘ imposed upon, and his Modesty was such,
 ‘ that he did not dictate to others ; but propo-
 ‘ sed his own Sense, with a due and decent di-
 ‘ strust ; and was ever very ready to hearken
 ‘ to what was suggested to him by others.
 ‘ When he differed from any, he expressed
 himself

himself in so humble and so obliging a way, that he never Treated Things or Persons with neglect, and I never heard, that he ever offended any one Person in his whole Life, by any Part of his Deportment; for if at any time he saw Cause to speak roundly to any; it was never in Passion, or with any reproachful or indecent Expressions. And as he was careful to give those that Conversed with him, no Cause or Colour for Displeasure, so he was yet more careful of those that were absent, never to speak ill of any; in which he was the exactest Man I ever knew. If the Discourse turned to be hard on any, he was presently silent, and if the Subject was too long dwelt on, he would at last interpose, and between reproof and rallery, divert it. That his Modesty was peculiar in his private Conversation was sufficiently evident to all those that conversed with him; and appears from those Specimens of his Conversation which he hath made Publick in his Writings, of which we shall produce this Instance mentioned in his Discourse of Things above Reason, where he says, Men flatter themselves too much, to think their Capacities of such extent, and unprepossessed, as many Philosophers think they are, since we are but Created and Finite Beings, being such, as it pleased the Author of Nature to make us, so that we may have congenite Notions, Appetites and Tendencies of Mind, as well as the means we are furnished with to inquire into and judge of Truth, being answerable to the Designs of our Maker, whose purpose was not, that we should

should be capable of comprehending all manner of Truths; many of which are unnecessary for us to know, and some chiefly designed to shew us our Imperfections, and make us desirous of that place, where our Understandings shall be enlarged. But though God hath limited our Faculties, that some Objects should be beyond the comprehension of our Intellects; yet we have Knowledg enough to discern, that we come short of knowing them. And in another place he says, it appears not from the Writings, but the Discourse of many Speculative Metaphysitians and Mathematicians, that after many frustrated Endeavours, they have owned themselves at a loss in several Points, not only in those abstruse Subjects of the Nature of God and a Human Soul, but those more obvious Bodies in the Corporeal World, and the least Portions of them. And as a further Instance of his Modesty we shall add, what he elsewhere says, *viz.* there are several things already which we think we know, because we never tryed to frame such *Ideas* as would be fit to acquiesce in.

And to shew what little Reason we have to boast of our Knowledg and Capacities, he in another place says, I am inclined to think, that God who is a free Agent, having made Intelligent Beings, may have made Ranks and Orders of them, whereof Man may not be the Principal; and if not, he hath made Man of a limited Nature and Capacity, and hath furnished him with innate *Ideas* or Principles, or a Faculty and Disposition to frame them, as Occasions happen to excite them. But

as he designed Man but a limited Capacity, his Understanding is suitably framed, that the innate or acquired *Ideas* or primitive Axioms it is endowed with, and by reference or similitude it judges of other Notions and Propositions, are not extended to all Objects that may be known, but only those that have affinity, to those primary *Ideas* and Rules of Truth, which are sufficient to help us to the attainment of a competent, though not a perfect, Knowledge, of as much as God thought fit to allow us in our present State.

And to represent both his Modesty in asserting, as well as a Caution in receiving Opinions, we shall add, what he further says, viz. We ought to regulate our Belief by our Perceptions and not our Wishes, and must not think that nothing is above our Capacities, because we wish there were none; nor will it make us, as knowing as Angels, because we desire it, nor can we be immortal, because we would not dye. And further he says, what caution ought to be used in affirming or rejecting Opinions in Natural Things, before Men are well acquainted with the Historical Part, that belongs to the Object Men propose to make Judgment of, is easily observed; and therefore we ought to be much more so, in forming Negative Propositions of things above the reach of Human Reason; nor ought we rudely to reject the Opinions of Learned Men, who differ from us about such things; since mistakes about things so sublime, ought the easiest to be pardoned, because not easily avoided; and since we may easily fall into as great mistakes

our selves; which ought to incline us to tolerate other Mens Opinions, our own being much short of Science. Yet on the other side, we ought to be wary, how we are imposed upon by Proofless Assertions; yet there is a great deal of difference betwixt assenting to a proofless Assertion, and framing negative Conclusions about Opinions, which for ought we know may be true.

His Humility.

Having thus briefly represented, the peculiar Modesty with which he delivered his Thoughts, both in Conversation as well as in his publick Writings, and the aversion he had to slandering and backbiting his Neighbours, we shall next proceed to shew, what Sentiments he had of Humility, which he both taught others by Practice and Example, as well as Precepts. And as Christian Vertues are Ornaments, and worthy of the Acquist of a great Soul, which appears yet greater when adorned with those necessary Endowments of the Mind, we shall briefly shew, what Vertues he thought were requisite to accomplish a great Soul & first, to speak the Sense of the Honourable Mr. Boyle, he says, Humility is a Vertue, which at the first sight seems different from Greatness of Mind; yet in conjunction with other Qualities, which makes up Greatness of Mind, or which is an Ornament of the Mind, it adds to their Number, and though not so bright as some of them, yet it adds Lustre to the rest. Nor will it seem a wonder, if we consider, that Wealth, Honour, and other Blessings, exalt a Man's Condition, to be Humble; amidst such Advantages, argues a Mind elevated above the Presents

Presents of Fortune, and great enough to undervalue; what others admire, and which some Men accounted great, make the Objects of their Ambition and Pride, when they have obtained them. And if the Person be famous for great Actions and Vertues, his Humility shews he hath a Noble *Idea* of Vertue, and valuing himself not upon such ordinary Attainments, still pursues a greater degree of Heroick Excellency. And if a Laudable Practice, which is difficult, is a sign of a great Soul, Humility must have that Character, it being more difficult to Excellent than Ordinary Souls. And it is more difficult, to overcome Vertues when they act united, than to contend only with Vices, Passions, or open Enemies, which a Man must do to be Humble; for though other Vertues assist one another, they all conspire against Humility; for Pride is so strange an Adversary, that sometimes by being foyled it overcomes; for when we use the best Arguments against it, the Success tempts the Master of them to be proud.

And as he thus represents the Excellency of Humility, so he shews us a great deal of Reason, we have to be so, and that we ought not to be so proud of our Attainments. Says he, it is not a little to be admired, that so many Men, and some of them Divines, should so little consider what God is, and what they are themselves, as to talk of him with as much freedom and unconcern, as of some Geometrical Figure or Mechanical Engin, as if the Nature and Perfections of that unparallelled Being were Objects of their Intellect, and such abstruse Subjects

jects within the reach of Human Reason, and familiar Objects of Sense. And as he says with St. Paul, *that the foolish things of God are wiser than Men, and the weak things of God stronger than Men*, so human contrivances are very shallow, and often limited to such as are but of one sort, as an Artist that can build a House, cannot build a Ship, and an excellent Clock-maker, may not make a good Watch, nor contrive a Fowling Piece or a Windmill.

And to shew further, what humble Thoughts we ought to have of our selves, and on the contrary, what respect we ought to have to God Almighty and his Word, he says, those who so much respect the Writings of the Antient Wits, because they believed those that discovered those Truths, were furnished with extraordinary Intellects, ought to pay a proportionable respect to the Omniscient Author, *for Men are but of Yesterday and know but little of nothing*; which are the Words of *Elihu* in Job, so that we ought to have very humble Thoughts of our Knowledge, which is so small, even in those things we know the most of, since Mr. Boyle, whose Knowledge was so large and universal, thought he had no Reason to be proud of what he knew.

But to shew further, how much he was Master of that Vertue Humility, we shall make use of the Words of the Right Reverend Father in God *Gibbes*, Lord Bishop of *Sarum*, "He had about him all that unaffected neglect of Pomp in Cloaths, Lodging, Furniture and Equipage which agreed with his grave and serious countenance of Life; and as he was far from taking a Pride in

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the pompous Vanities of the World, and of that external Greatness of Appearance, which amuses the World, so he took Pains rather to magnify the Endowments of his Mind, and to have that true Intrinsic Greatness which consists in the Greatness of the Soul. He was not of that vain Opinion to think, that

—*Nobilitas sola est atq; unica Virtus.*

He valued not that outside and only Titular Dignity, which distinguishes Men only by Titles of Honour, but estimated true Greatness by other Characteristicks, viz. those of the Mind. Indeed, the Vulgar, says he, whose Judgment is rather lodged in the Eye than the Brain, when they think of Greatness of Mind, fancy something like the Coronation of a King, attended with Pomp and Splendor, a great number of Gazers, and the clamorous Acclamations of the People. And they think, that an Heroick Soul can be no where lodged, but in a great Commander, like a *Roman* Emperor, or a *Tartarian* General, who Commands and Conquers Armies, makes Countries desolate, and leaves them peopled only with dead Bodies. But Reason and Religion, which respect Human Things, without those glittering Varnishes, which dazles the Eyes of the Vulgar, distinguish easily betwixt Greatness of Fortune and Greatness of Mind; and Christianity teaches, that God who is no respecter of Persons, sees not Persons as Man sees them, and that *nothing that is sublime amongst Men, may be an abomination to him.* But a Philosopher may easily distinguish

stinguish real Greatness inherent in a Man, from that Pompous one annexed to Fortune. And though peculiar Honour and Respect is due to Vertue in Sovereigns, more than Subjects, as it is more diffusive in the former and beneficial, and cannot continue without resisting stronger Temptations, yet we know, that an Emperor though never so great, can neither find nor make a Soul.

But he had another Notion of Greatness from the Vulgar, and only aimed at that Greatness, which *Solomon* and other wise Men call true Greatness; says he, true Greatness of Mind resides in the Soul, and is perfective of it. But neither Fortune nor outward Greatness can make a Soul Great, though they may afford Opportunities of shewing it so. And the submission and respect which Men shew, through Custom, Fear or Interest, to such as are only Great by their Titles, Places or Power, adds as little to the Worth of those Persons, as standing for more in Count does to the value of a Brass Counter, that value turning it neither into Gold nor Silver. — *Socrates* in his private and necessitous Condition, when *Greece* was the Theatre of Generous Minds, was preferred by the Oracle to all the *Grecians*; and that of *Delphos* declared the Widdows Mind and Circumstances, and her Mite as greater Liberality than all the rich Man bestowed upon the Corban.

We are not therefore says *Mr. Boyle*, to take our Estimate of so sublime and extraordinary a Quality, as Greatness of Mind, from the mean Notions of the Vulgar, nor the fond O-

pionias

pinions of common Souls; since they approve and applaud a great many things, which deserve but little Esteem, if condemned by the Wise.

But to shew wherein Greatness of Mind truly consists, and what a Man ought chiefly to value himself for, he says, a Man may be said to have a great Mind, who employs his utmost moral diligence, to find out what Actions he had best pursue, and then prosecutes them, without being deterred by dangers, or discouraged by difficulties, with resolution and steadiness of Mind, as far as his Abilities and Opportunities will admit, and out of an Internal Principle of Love to God and Man, and with a sincere Aim to glorify the one, and benefit the other; of which Greatness of Mind he had as great a share as any Body, it being the principal business and study of his Life, as well as his constant Practice.

And as he made Humility, and the prosecuting of Christian Vertues the standard of Magnanimity, and the *cleansing of our selves from all Filthiness both of Flesh and Spirit, and the abstaining from all kind or appearance of Evil*, a part of our Christian Duty, so on the other hand, we are obliged by the same Rules, to furnish our selves with the Knowledge of Christian Vertues, and to put them in Practice, since *unless our Righteousness exceeds that of the Scribes and Pharisees, who covet the chief Seats in the Synagogues, and Greetings in the Market Place, we shall not enter into the Kingdom of God.*

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But

*His slight
of Honour
and Pre-
ferments,
&c.*

But as the Honourable Mr. *Boyle* had a just Opinion of the Vanities and pompous Glosses which amuse a great part of Mankind, and only coveted that Greatness, which appears Glorious in Heaven, so he as little valued the Advantage as the Honour of empty Titles; as we intimated before, he refused, though pressed to it, the greatest prospects of Advantage and Dignity in Ecclesiastical Preferments. Nor did less industriously avoid temporal Honours or Interest, to use Dr. *Burnet's* Words; "He spoke of the Government even in times which he disliked, and upon Occasions which he spared not to condemn, with an exactness of Respect. He withdrew early from Courts and publick Affairs, yet was always honourably treated by his Princes, and had he aimed at it, might have attained both Honour and Advantage.

The Honour and Dignity he aimed at were not Temporal but Eternal Advantages, and to use his own Words; the reward of a good Conscience which affords great Advantages to those whose Vertue flows from Religion: and to apply the Words he hath used on another occasion, the Applauses of a Good Conscience being more acceptable to him than all the Music, which Solemnized the Dedication of *Nebuchadnezar's* Golden Image; since a Christian Conscience does not only, act the Part of a Judge, but of a Delegate from God himself. And it's Absolutions are more welcome, as Pledges of God's Acceptance, and the Reward in the World to come, than barely the Approbation of Reason; Heaven being a place of Happiness

Happiness far beyond my Power to describe, made up of a Confluence of all Things, which Reason can desire; for as the Scripture says, *Eye hath not seen, nor Ear heard, nor the Heart of Man conceived, what God hath laid up for them that fear him.*

The Title of Honour which he thought most worthy was a Good Name, which to speak his Opinion of, we shall make use of his own Expressions. A Good Name for Good Actions, must be very desirable, the Applause of Wise and Good Men, being aloud Eccho to confirm the Approbation of the Conscience within, which though vertuous and worthy Actions are the most likely to acquire it; yet it is not a certain one, Ignorance, Malice and Envy, being apt to misrepresent a Man. The Sublimity, Brightness and regular Motions of the Stars hath not Exempted them from the Name of the Lyon, the Eagle, or of more Contemptible Creatures, as the Dog, the Goat, &c. And though Innocency, like Lightning, may break out at the last, yet it often happens, that Malice and Envy are dead first, because the maligned Person is so; so that he lives not to know he is Justified, nor may those misinformed Persons live to be undeceived, whose Opinion he aimed at. But that which is Satisfaction to a Christian is to use Mr. Boyle's Expressions. Though a Christian may be traduced by Calumny, and represented as the Heathens did the Martyrs, in the skins of Beasts to make them Hideous and Hateful, yet it affords him Satisfaction, that his Oppressed Innocency shall shine forth and Triumph, and his good Name as well as his Body,

Body, have a Glorious Resurrection, and be justified before his Enemies and Slanderers, as well as those that were misled by them. For at that great Assize there will be a far greater Confluence than the *Assyrian Monarch* drew to the Plains of *Babylon*. Where the Disciples of the *Apostles* may say, upon happier Terms than they did here below, we are made a *Spectacle to God, to Angels, and to Men*. And in that Illustrious Assembly of the *First Born*, whose Names are wrote in *Heaven*, the Vizards shall be taken off, and the traduced Saints wellcomed with the Title, *Good and Faithful Servants*, and acquitted by the Sentence of an Infinite and Supreme Judg, that *Searches the Hearts and Reins*, and cannot be deceived or bribed. Where the injured Saint shall come off with Honour, and instead of Calumny receive a Crown.

As for the Honour and Dignity he aimed at, though it was not Temporal, it was much to be preferred before the Crowns of Monarchs here below ; for, as he says, Earthly Crowns may be the Reward of Worth and Vertue, but are not the Proofs of them. Sometimes they are the Gifts of Nature or of Fortune, and which is pitty, the acquists of Crimes. But Celestial Crowns proclaim the Worth of the Receiver, being the Reward of Previous Graces and Vertues in those that are found qualified for the inheritance of the *Saints in Light*. Besides Earthly Crowns may be obtained without Merit, and possessed without Happiness ; but a Crown of Righteousness being the Reward of Vertue, is an inseparable Blessing and Happiness. — and further ; an Earthly Crown be-
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ing Hereditary, cannot preserve the Professor from Death, whilst the other is called a *Crown of Life*, and an *unwithering Crown of Glory*, which *gives Life to the owners of it*, and which is an *Additional Happiness, in a Kingdom that cannot be moved.*

And to encourage others to what he so much valued and pursued, he adds, that as to have a Noble Design is the chief sign of an Heroick Temper of Mind, so none can have sublimer Aims, than those which a Christian is encouraged to, which is *to please and glorify God, to promote the good of Mankind, to improve as much as possible his Personal Excellences in this Life, and to secure to himself for ever a Glorious and Happy Condition in the next.* And this none could more constantly and exactly pursue in their Endeavours and aim at than Mr. Boyle, it being his daily study to Please and Glorify God, and to do good to Mankind, and to improve himself beyond common Examples; so that he might reasonably entertain a lively hope of future Felicity.

From hence it appears, how much this Great and Good Man contemned and slighted the Vanities of this World, though his Parts and Fortune could so easily have lead him into the fullest Enjoyment of them; so that what he says on another occasion, in respect of himself, may be applyed perhaps to some that read his Works, viz. *It hath a greater Influence on me to find the Vanities of the World, proclaimed by one who (might have) enjoyed all the Pleasures of it, than if the same Truth were delivered by a beggarly Cynick, that never tasted of them;*

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for a little share of Philosophy may make him despise that which the narrowness of his Fortune would never allow him to enjoy; but the Honourable Mr. Boyle, who was endowed with a plentiful Fortune, was so far from indulging himself in the vain Pleasure and Pomp of the World, that he rather employed his Superfluities, in Charity and Useful Improvements, his sole delight being in doing Good to his, own Soul and to his fellow Creatures, and in Improving Useful Knowledg.

His Aversion to Popularity and Vain Glory.

And as he contemned and slighted, or rather made a due Estimate of the Trivial and Transitory Pleasures of this Life, preferring those that were Eternal; so he coveted not to be popular, nor was he puffed up with Vain Glory. To make use of Dr. Burnet's Expressions tho', they had often occasions to discover new Instances of Goodness in him; no secret Inclinations did at any time shew themselves. He affected nothing that was Solemn or Supercilious. He used no Methods to make Multitudes run after him, or depend upon him. It never appeared that there was any thing he hid under all this appearance of Goodness, that was not truly so. He hid both his Piety and Charity all he could. He lived in the truest Methods of Civility, and would never assume the Authority, which all the World was ready to pay him; he allowed himself a great deal of decent Cheerfulness, so that he had nothing of the Moroseness, to which Philosophers think, they have some right, nor of the Affectations which Men of an Extraordinary Pitch of Devotion go into some times, without being well aware of them.

‘them. He was in a Word plainly and sincerely in the sight of God, as well as in the view of Men, a good Man even one of a Thousand.

And as he was Civil to his acquaintance, and very exact in the Rules of Decency, so he used no less Humanity and Civility to Strangers and Foreigners, to whom he was extraordinary Civil and Obliging. To use the Words of the Learned Bishop Burnet, “He was exactly Civil rather to Ceremony; and though he felt his easiness of access, and the desires of many, all strangers in particular, to be much with him made great waste on his time; yet as he was severe in that, not to be denied when he was at home, so he said he knew the Heart of a stranger, and how much eased his own had been; while Travelling, if admitted into the Conversation of those he desired to see; therefore he thought his Obligation to Strangers, was more than bare Civility, it was a piece of Religious Charity in him. Nor did he receive them only with Common Civility, but Hospitality, using strangers rather as Friends than as such. This I have been told occasioned a great many Visits, which otherwise would not have so much Interrupted him, a great many making their Addresses, as much for the sake of their kind Entertainment as to gratify their Curiosity, which nevertheless met with the same Civility and Candid Entertainment; his own sincerity gave him no Room to suspect it in other Persons, and his Sagacity and Judgment was too great to be imposed upon, his Reason being sufficient to weigh and distinguish

His Humanity and Civility to Strangers.

stinguish what Relations were Probable and what were Fabulous.

*His Pati-
ence in Af-
flictions.*

But to proceed to the rest of those Christi-
an Vertues, which the Honourable Mr. Boyle
excelled in, to what we have already mentioned,
we shall add that great Vertue of Patience
which none could be a greater Master of than
the Worthy Mr. Boyle, who had frequent oc-
casions to make use of it. And as Patience in
Afflictions is a much greater Vertue than in o-
ther Cases, so he exercised it no less upon those
occasions than in ordinary ones. This Mr.
Boyle himself reckons amongst those Vertues
which make up Greatness of Mind, and says,
it is so Noble a Quality, that it gains esteem
when exercised by Malefactors, for though their
Actions are inexcusable, yet their manner of
suffering for them must be commended. Calm-
ness of Mind in the Midst of Storms, looks
so handsomely, that neither Crimes nor their
Punishments can hide it, nor hinder the Person
from being pitied and applauded. And that
the Christian Religion contributes to this Qua-
lity, and part of Greatness of Mind, will ap-
pear from what it contributes to Patience and
Constancy, under outward Calamities, by
Precepts, Examples and Arguments.

That Mr. Boyle had a great deal of occasion
to exercise this Vertue of Patience was very e-
vident to all that knew him. "He had for al-
most Forty Years, laboured under such a fee-
bleness of Body, and such lowness of strength
and spirits, that it will appear a Surprizing
thing to imagin, how it was possible for him
to read, to meditate, to try Experiments, and
to

‘to write as he did. He bore all his Infirmities
‘and some sharp Pains with the Decency and Sub-
‘mission that became a Christian and a Philo-
‘sopher. He had Noble Thoughts as well as
Christianity enough, to support him under the
Heaviest Burthens, knowing that God Almighty
often afflicts those most whom he loves, and
and therefore in his Occasional Reflections on
the pruning of a Tree, he says, the pruning of
a Tree may give us these Thoughts, for as by
cutting several Twigs, and Nailing the rest
to the Wall, the Gardener both secures it from
being blow down, and also makes it look well
shaped; so the Divine Husbandman by his Af-
flictions, secures them from a great many dan-
gers, and as he secures their safety, by obstructing
their Liberty, so by afflicting them he adorns
them; those kind and skillful strokes beautify-
ing a Christians Mind, as they diminish the Su-
perfluities of their Fortune; for afflictions give
so much Gloss to the Soul that bears them pa-
tiently and resignedly, that the Heathen Mora-
list ventured to say, that if any thing here be-
low was worthy the sight of God, it was a good
Man generously contending with ill Fortune;
which *Hyperbole* will be the less strange, if we con-
sider that when *Jobs* Patience was tryed to the
uttermost, it was Crowned with Fortune fairer
than the best in the East; and when it was not
so far tryed; his Constancy was received with
higher than Mortal Honour, as any thing that
was ever confered on Man before, God him-
self declaring his Approbation, as if he boasted
of a Man, *hast thou considered my Servant Job,*
that there is none like him in the Earth, a Perfect

and Upright Man, one that feareth God and escheweth Evil ; and still he holdeth fast his Integrity, although thou movest me against him to destroy him without a Cause, Job 2. 3. And as Mr. Boyle proposed Job as a Pattern for others, himself might be another worthy our Imitation ; and though his Afflictions only affected his Body, yet those are most sensibly felt that occasions Pain. As for his Estate, there was no need for God Almighty to Afflict him that way, to diminish his Superfluities : He knew too well whom he had Intrusted it with, and that his Charity could dispose of those fast enough, nor could they be better employed than in doing Good.

When ill Men are afflicted by God Almighty, we may think those Afflictions are the punishments of their Vices, but when such pious Persons suffer and are afflicted as much as wicked Men, the World is apt to censure even the Righteous, but there was no room left for such Reflections, on a Man of his Probity and Goodness, he not only served God truly, but Mankind in general ; and was always improving the Talent God committed to his Charge, so that what he applyed upon a general Occasion, may be said in some respect of himself, viz. When we see a Tree pruned, one that understands not the Reason of it, might think the Gardener an Enemy to the Tree, as if he meant to cut it in pieces, but one that considers that it is not anger but skill, that made him lop off some Branches, and that he designs not to destroy it, but to make it fruitful ; and thus, whether one that knows not the designs of Providence, may think when a Church is exposed

posed to the Afflictions of private Societies and Persecutions, which seem to be Divine Indictions, that give Men occasion to say of the Body, as *Isaiah* said of the Head, *we esteemed him stricken, smitten of God and afflicted. Isa. 53. 4.* I say, whatever a Carnal Man might say of these Distresses, a Christian will not thence infer, that God hates the Church, or hath left her, since he loved her so well as to give himself for her, and chastens and rebukes whom he Loves. This is applicable also to Believers, so that the great Cultivator of the Ground, both lets us know, that Afflictions do not suppose God's Hate, and that they do not always suppose Man's Guilt, but sometimes rather tend to his Improvement, since our saviour says, *Joh. 15. 2. Every Branch in me that beareth not Fruit, he taketh away, and every Branch that beareth Fruit, he purges it, that it may bring forth more Fruit.*

But the Honourable Mr. Boyle was so good *His Self-denial.* a Christian, and so exact in his Practice of it, that he could only be made better, by exercising that Vertue of Patience, which he was very constant in; for as he was of so infirm a Body, so he was as exact in observing Rules to preserve his Health, as much as possible, "He was advised to a very ungrateful simplicity of Diet, which by all appearance, was that which preserved him so long, beyond all Mens expectations; this he observed so strictly, that in a Course of above thirty Years, he neither eat nor drank to gratify the varieties of Appetite, but meerly to support Nature; and was so regular in it, that he never once transgressed the Rule, Measure, and Kind,

h 4

that

‘that was prescribed him. He had a feebleness
 ‘in his Sight, his Eyes were so well used by
 ‘him, that it will be easily imagined, he was
 ‘very tender of them, and very apprehensive
 ‘of what Distempers might affect them. This
 is very evident, from the particular Observa-
 tions he hath made of the Structure of those
 Parts, and of the Accidents they are subject to,
 in which he was very curious and exact, but
 of this in another place.

*The pious
 Use he
 made of Af-
 flictions.*

But to proceed, to some very signal Instan-
 ces, not only of his great Patience, but the
 extraordinary pious Use he made of his Affli-
 ctions, so that he could out of every thing, to
 use his own Words, strike some sparkles of
 Celestial Fire, that would kindle, feed or re-
 vive it, and by this means, he made the say-
 ing good, *that all things work together for good
 to them that seek God*, Rom. 8. 28. A devout
 occasional Meditation, being from never so
 mean a Theme, like Jacob’s Ladder; whose
 Foot leaned on the Earth, and the Top reached up
 to Heaven, Gen. 28. 12.

As Mr. Boyle was of an infirm Body and
 subject to Disorders, to shew what pious Uses
 he made of his Afflictions, and consequently
 how patiently he bore them, we shall here give
 a brief summary of some Reflections he made
 in the time of his Sickness. Being seized with
 an Ague fit, says he, it had not surprized me,
 had I considered of how many curious Parts
 such an exquisite Engin consists, whose Har-
 mony is requisite for Health; so that it is not
 strange a Man’s Body should be subject to Pain
 or Sicknes; no more than that an Instrument
 with

with above a Thousand Springs, should be often out of Tune, since the change of Air may as well discompose the Body of a Man, as untune the Strings of an Instrument, so that the structure and fabrick of a Man's Body is so curious and elaborate, that it is a wonder it is no oftner out of order than it is. And if we further consider, how many outward Accidents may destroy the Health or Life of those that are most careful to preserve them; again if we consider, how many ways our Appetites or Vices, which makes the Creatures offend us, and how Sin may provoke the Creator to punish us; I say, if we consider all the Accidents that may happen before grey Hairs, it is a wonder if an Old Man be any thing Healthy. But these things are seldom thought of, till excited by some ill Accident, those that are in Health thinking to continue so, without thinking that a Mercy. We think not how much our Welfare depends on the Will of Divine Providence, when we long enjoy Mercies; and therefore he deprives us of them, to make us sensible we stand in need of them, it being reasonable, those Mercies should be denied, which are not acknowledged as such; this Sickness therefore shall make me thankful for Health, when God shall please to restore it; nor shall I confidently depend upon it's continuance; for though we are not inclined to follow the Wise Man's advice, who bids us not *boast our selves of to Morrow, because we know not what a Day may bring forth.* Yet he had not done amiss, if instead of a Day, he had substituted an Hour, for we are exposed to so many Accidents,

Accidents, that Health will deserve our Thanks as well as Wonder. And though my Sickness was but my unhappiness, my surprize at it was my fault.

And to manifest the Greatness of his Soul, and how he could be Master of his Thoughts, whilst his Body was disordered, we shall represent, what useful Reflections he made on the troublesom fit of his Ague; says he, one that should see me covered with so many Cloaths, would scarce think me troubled with Cold, and if he was, he would be apt to envy me. And if he should see me in the hot Fit, uncovered, he would think I lay very cool. But instead of that, an Internal Frost is in every Part, and I am so little relieved by the Number of Cloaths, that I might sooner be crushed with more, than warmed. Thus when a great Man is affected with Ambition, or any other immoderate Affection, though the by-standers see not the Cause of his disquiet, and may envy the Plenty he is possessed with, yet they will little suspect his want of Contentment. And as the Cold of External Air is more supportable than the Cold of an Ague-fit, with a pile of Blankets, or the hot fit with a single Sheet; so external Inconveniences are more supportable, than the best Accommodations to a distempered Soul. Men's Happiness therefore consists, not so much in what they have, as in what they are. Fortune can but give much, but the Mind makes that much enough.

But further, says he, in the cold fit I rather desired the Torrid than the Temperate Zone, and envied the Labourers that tend the Chy-

mists

mists Fires. But when the hot fit succeeded, I thought it worse than the cold one, and removed the Cloaths with as much importunity as I called for them before. I then envied the Inhabitants of *Norway*, and the Fish that swim in cold Streams. Upon which, says he, if a Man's condition can so soon alter, that what he thought a grievance becomes a relief, we may easily mistake in estimating Afflictions, and judge them not so uneasy as we think them, since we increase the Affliction by repining at it. A Man in Affliction is apt to think, that he suffers worse than any other, and is apt to say otherwise than *St. Paul*, who says, *no Temptation hath befallen you, but what is common to Men*, *1 Cor. 10. 13.* He thinks he could more easily bear other Peoples Afflictions than his own, yet if Sicknes was changed he would wish for the former, and be as much concerned at his Colly, as at the disease. Every Distemper hath it's particular symptoms and uneasiness, tho' Religion may soften and mollify them. And that which increases our unhappiness in Sicknes is, that we fancy our Distemper more grievous than if it was some other. But we should make a better estimate of Afflictions, if we considered the attending uneasiness in general; and therefore what we find may proceed from the Nature of the Sicknes and Crosses, rather than from the particular kind or degree of ours. And many who we think less sufferers than our selves, would be glad to change with us, and though they carry it off better, yet they find no more ease than we, according to *St. Peter*, who says, *that the same sufferings*

sufferings are accomplished upon our Brethren in the World, 1 Pet. 5 9.

But further, he was so piously inclined, that every Misfortune and every Chance of it gave him an Opportunity of improving it to his advantage, says he, drinking no longer relieving my Thirst, than I was swallowing it, and what was worse increasing my Thirst as it increased the Fever, and Juleps being only serviceable as they relieved my Fancy, and palliated my Expectation, the Doctor ordered Phlebotomy to remove the Symptoms, by taking away the Cause. Thus when the Mind is disturbed and eagerly pursues Objects unfit for the Person, they think the only way to oppose their desires is to grant them what they desire, but a discreet Physician, minds not so much what we desire, as what is convenient for us, and a Lancet performs what Juleps will not. So God Almighty takes away spiritual superfluities, rather than grants what we inordinately desire, and a few Afflictions help to moderate our inordinate Appetites. To gratify our Appetites, amuses, but does not cure the Patient, but seasonable Crosses make us know our selves, and sensible how little those things we are greedy of, would contribute to make us happy, and if obtained, may produce a Resignation and Tranquility of Mind; so that being denyed the Enjoyment of them, we find not the need of them.

Being obliged to take Physick, he makes this Reflection. Being in hopes each Dose would be the last, I still find and fear there will be further Occasion; but though it is troublesome it is healthful, and if loathsome, the sickness is much

much worse. Thus a relenting Sinner, having washed away his Sins with his Tears, may think himself thoroughly cleansed, and if entertained with those delights which God bestows on returning Prodigals, he is inclined to think that Repentance like Baptism needs to be repeated but once in a Man's Life time. But though an unexperienced Convert may say, he shall never be moved, yet though *the Spirit indeed is willing, but the Flesh it weak*, and frequently our Resolutions abate with our Joys; and those who have thought they could despise the World, have in a little time been mistaken, finding it hard to be amongst Sinners, without being of their Number, and in a World so defiled, without a Spot. And as *David* said in his Prosperity, he should never be moved, so in Distress he said, he should one day dye by the hand of *Saul*; so in the height of Joy and Tears of Repentance, we are apt to contemn and despise all Ghostly Enemies, but in a little time these Resolutions will meet with Impediments, and turn into Despair, we thinking those despicable Enemies invincible, but as we ought not to reject Physick, that does good for a time, nor other Measures that assist our Recovery; so though Repentance is to be repeated frequently, since it is the only means to recover our Souls out of a state of Sin, we are not to be discouraged, but to renew that Duty as often as we fall into Sin, with a hearty sorrow for them, and firm resolves against them. And as Physick is to be chosen before Sicknes, so Repentance is better than to continue in Sin. And as a bitter Potion is better than the Symptoms of an Ague, so

so sorrow for sin here is better than Lamentation, where there is nothing but wailing and gnashing of Teeth. Our Souls in this are much like our Bodies, our whole Lives being spent betwixt gathering and purging away ill Humours. And the Flesh is still saying to the Spirit, as *Ruth* did to *Naomi*, *The Lord do so to me and more also, if ought but Death part thee and me.* But though Defilements are washed away they do as often return; and though the necessity of asking many Pardons for the same fault, may give just Occasion for an ingenious Christian to cry out with *St. Paul*, *O! wretched Man that I am, who shall deliver me from the Body of this Death,* yet the sense of our own frailty may also comfort us, and give us occasion to say, *Thanks be to God who hath given us the Victory through our Lord Jesus Christ.*

His
Thoughts of
Death in
his Sickness.

Such Thoughts as these the pious *Mr. Boyle* had on all the Turns and Circumstances of his Distemper, we shall only mention the following, referring the Reader for the rest to his occasional Reflections; says he, finding my Distemper attended with unusual Symptoms which might prove Mortal, I began to think of my End, which we ought more readily to entertain. First, since we cannot be too well provided for an Act that never can be acted but once, and as it is appointed for all Men once to die, so after Death comes Judgment, and where the Tree falls, there it lies, so errors in this last Action being irreparable, is the safest way to follow the Example of him that says, *If a Man dies shall he live again,* to which he adds by way of Inference, *all the days of my appointed time, will I wait till*

my change comes. Secondly, we ought to think of the Grave to provide our selves against many Dangers, which perhaps may never reach us; for several endure more Torment by the Apprehension, than they would by the Infliction of Mischief; but Death is what will at one time or another, certainly come, and therefore the Thoughts of it may be serviceable and advantagious; the Thoughts of Death, tending to make us live well, and consequently as advantagious to those that live as those that die: but not to mention all the thoughts that every Person, as a Man or a Christian, would have upon a Death Bed, we shall mention some suggested by the general Circumstances of my Condition. The Approach of Death is apt to make Men serious, and to make a truer Judgment of the World they are to leave, having no partiality for the pleasures and profits of Life, they are about to quit: And as Men are apt to have their Thoughts better grounded, so they are to speak them more freely; Death being free from Hypocrisy, as well as stripping them of other things.

One thing then I was thinking was, how wretched I should be, were I of the same Mind with the Generality of those of my Age, who think their Youth as good an Excuse for, as it is a Temptation to Vanity, and that they do a great deal in their Youth, if they resolve to reform, when it is gone, and they think more than Intentional Religion, is a Reflection upon Youth, as well as an encroachment upon Old Age. But how few live to be Old, and it is but little Satisfaction on a Death Bed to think, that

that according to the Course of Nature a Man might have lived longer, since the Thoughts must be dismal to unprovided Persons, whose early decay imployes the number of his Iniquities, and that his Death is rather a Punishment for his Sins, than a Debt due to Nature. The pleasures of Sin will not countervail the Horrors they Create in a Dying Person, who is not only to leave them, but to suffer for them. But when a Man hath forsaken his Pleasures for Vertue or Religions sake, it will yeild him far greater Joys, than the Fruition of them could afford him.

But to proceed, to some other Thoughts and Apprehensions of Death might suggest to him, says he, I must confess I have quite different Thoughts now of a sufficient Preparation for Death, than I had in Health. If then a Christian should frequently break his Resolutions, but never renounce them, but often stumbled in the way to Heaven, and find the approach of Death formidable, being free from Scandal and something more than negative Piety; is not common amongst those that have the Opportunities of enjoying the Pleasures and Vanities of this World; which with the Charity of others, and my own self-flattery, made me think I was fitter to dye, than to be afraid of it. But now I see the Grave underneath me, and that Gulph of Eternity, it is difficult to prepare for a Change, to be doomed by an Omniscient Judg, to a state of Eternal Happiness or Misery. The Death-bed makes us remember those things, which Youth and Jollity make us forget, and those frivolous Arguments

ments which Excuses us in Health to our indulgent Thoughts, will scarce now be thought sufficient to excuse us to God, before whom if the Angels cover their Faces, sinful Men may tremble to be brought. When approaching Death makes our Eyes grow dim, our Consciences more clearly discern, that our Senses prevailed upon our Reason, which made us acquiesce in those frivolous Pleas; but when we appear before God, our Jolly Companions cannot excuse those Actions they tempted us to, since they must be condemned themselves. If we consider Death as the Conclusion of Life, and a Debt Due to Nature, it is sufficient to excite Horror; but if we consider, that the Body will not only corrupt, but the Soul must be brought to the Tribunal of God, to answer for the Actions of this Life, and there to be condemned to Eternal Torments, or Sentenced to inexpressible Joys, such a change must occasion a Commotion in the most Pious or Courageous; and those that would not be afraid of Death it self, will be afraid of Eternity.

Another Reflection he hath made upon this occasion is, that most Men think a Death Bed the fittest place for Repentance; but such must little consider the Disadvantage of Sickness, *His Opinion of Repentance on a Death Bed.* the Nature of Repentance. Indeed Sin and Death may more easily frighten us when both together, but being frightened with Hell, will not give us Hopes of Heaven; or when Sin and Torment appear together, it is not easily to discover which of the two frights us towards Heaven. And Repentance which ought to

to be the Work of a Man's whole Life, and to be a thorough Change of the Man is improperly begun, when his Course is almost finished, in which it should have guided him. Nor can Men Reasonably think, that whilst God is punishing them for their Sins, he will vouchsafe them the Grace of Repentance, which they refused before. Besides in so uncertain a state, it is hard to promise themselves the Opportunity : Who knows, when a Phrensy may seize the Brain, and cast the Patient into a Desperate Condition on this side the Grave, so that the Man may be dead, before his Body is dissolved.

But though these things happen not, the Organical Faculties of the Mind, must be dulled by the Disorder of the Spirits, by which they perform their Offices ; besides the Sense of Pain, the Effects of Medicines, the Faintness of the Spirits, the uneasiness for want of sleep, and occasioned by Medicines, the Importunities of interested Persons about them ; that like Birds of Prey wait for a Carcass, the Tears of Friends at the last farewell, the uneasy Direction of a Lawyer to draw a Will, the Divines Discourse about the Soul, and the Conscience frightened, render a Man's Condition so amazing, dismal and distracting, that it is as much madness to think this a proper time for Repentance, as any a Death Bed can produce, it is so improper a time to begin to provide Graces on a Death Bed, that it is difficult there to practice such Graces as were before acquired, it being difficult there to reap the Consolation of a pious Life.

But one Consideration that may deter us from relying on a death bed Repentance is, that though we allow that they are mistaken, who think such a Repentance too late, yet though a dying Sinner may not despair of Heaven, yet he can scarce have a Comfortable Assurance of it; for though true Repentance cannot be too late; yet it is a Question, whether that late Repentance is true; for Repentance, implying a renouncing of Sin, at least with a hearty purpose and resolution, an habitual Sinner, who remembers how often he hath violated those Vows and Promises of Amendment, which Sickness or Dangers have extorted from him, when those Dangers were over, cannot easily be sure, that the present is not of the same kind, since he hath no Experience to shew, whether his Resolutions would prevail against the opposite Temptations: Besides a Man may easily mistake a true Hatred for Sin, and Love of God for horror of the impending Dangers, Sin makes himself subject to, and a Strong desire to go to Heaven, when he is no longer able to stay upon Earth, but must go to Hell if he Miscarries. And as it is difficult for a Man to know upon what Account he is sorry, when he feels the punishment of Sin, so it must be a strange uncomfortable state; for a Man to be hurried to the Grave, when he cannot tell whether he is going to Heaven or Hell. And if he should be mistaken in estimating the validity of his Repentance, the error would be fatal, and without remedy, and more horrid than that of the Syrians, who instead of arriving Victorious at Doshan, found themselves at their Enemies

Mercy in *Samaria*, 2 *Kings* 6. 18. But to Conclude, he that renounces not his Sins, till Christ is ready to renounce him, both hazards his Soul and Ingenuity, and it will be a sad loss for a Man, to loose the opportunities of a pious Life by Death, and to derive his comfort from the bare assurance that he intends it.

I thought here to have passed on to another Topick and pursued the Exemplary Vertues of this bright and noble Character, but there are some Instances of the Extraordinary pious Thoughts of Mr. *Boyle*. so remarkable, that I cannot here easily pass them over, one is upon his comparing a Clock with a Watch, where he observed, that though the Circle on which the Hours are placed in a Clock is much greater than that of the Watch; yet the Index being at the Hour twelve, when the other was but at eleven, though the larger had moved over the greater space: yet the Index of the Watch went not only truer but faster. Thus, says he, we are not to estimate Men's Lives by their Duration; some loyter so much of their Lives away, that they have nothing to shew their Age, but Church Books and gray Hairs; and they as little live that spend their Years in Diversions, neglecting the business and true end of Life, so that such may be rather said to have lasted, than to have lived long. So a Traveller, that wanders to and fro without pursuing the right way, may rather be said to have been long on Horse-back, than to have performed a long Journey; whereas he that makes good Use of his time, and hath soon perform'd what he was sent into the World for, may have lived

long

long enough, and consequently longer than those that have gray Hairs, though born some Years before him, so that one may be said to have had a longer Time, and the other a longer Life, as the Heathen said *Non est vivere, sed valere vita.* And how short soever time a Man may live, if in that time he hath done, that which was the end of Living, the Acquisition of compotent Knowledg, and the Practice of Graces and Vertues, that fit a Man to Glorify God, and to be Glorified by him, in that which shall have no end.

The Honourable Mr Boyle having thus shewn not only how patiently he bore his sickness, but how pious Uses made of his Afflictions may tend to make a Man better, to these Observations we shall only add one other, which he made upon his Recovery and the Apprehensions of a relapse which may evince, how thankful he was to God Almighty for his Blessings, and what good Uses he made of such; says he, having recovered my Health, and being able to pursue my usual Course of Life, what our Saviour said to the *Paralytick* may be seasonable, *Behold thou art made whole, sin no more, lest a worse thing come unto thee.* Yet though I am free from my Distemper, I am not from the Apprehensions of it; for having had Experience of my Sickness, I have the more value for my Health, and am now more Jealous in preserving such a Blessing; and the small Chilness, which I formerly imputed to the Spleen or Melancholly, I am now apt to suspect, as the forerunners of my distemper, and therefore I am careful to avoid all irregularities, which may

endanger a relapse. But why should not I be as solicitous for the welfare of my Soul, and avoid cherishing such beginnings, as have ended in sin, when neglected, and as dangerous Distempers leave the Body infirm, and subject to Relapses; so sins commonly leave behind them a Disposition to fall into the same Sins, Men being much more apt to relapse into Spiritual Distempers, than those of the Body; so that we ought to have a much greater Care of those relapses that concern the Soul, if we think the noblest Part is the most worthy looking after.

*His
Thoughts of
Prosperity.*

Having thus shewn, how patiently Mr. Boyle bore his Afflictions, and what a pious use he made of them, and how he pursued his way to Heaven, through Bryars and Thorns, and how the Infirmities of his Body added strength to his Soul, so that his Infelicities became a Happiness, we shall in the next place take a short view of some of his Thoughts of Prosperity. Says he, it is too usual to stumble in the smooth ways of Prosperity, though we pass steadily through Adversities. And it is an old saying, that Fortune ruins more in her Embraces, than whilst she would crush them. And those that make the observation are as frequently Instances of it; Fortune hath not yet turned Syren to pervert me, and hath hitherto given me more Exercise for Constancy than Moderation. I have often wished my self in the number of the prosperous, who never think Prosperity formidable till deserted by her. But upon second Thoughts, I leave the choice of my Antagonist to Fortune, and him that knows
my

my strength and gives it me, since *Solomon* says, even the just Man falls seven times a Day, *Prou.* 24. 16. So stumblers often happen to miscarry in the fairest way, into which when Providence leads me, it will be seasonable to pray, lead us not into Temptation, and I shall consider, that Ice is not only the smoothest but the slipperiest of ways, and we ought to be no where more Cautious, than where Treacherous Evenness makes us think our selves most secure. Where he manifests not only his entire Resignation to the Will of God, but puts us in mind to be Cautious, and to provide our selves against the Influence of Adversity.

And in another place, speaking of the Condition of a certain Lord, says he, if one not knowing his Humour and Aims, should know his Estate and his Skill to manage it, he would be apt to envy the happiness of his Condition, nothing appearing to be wanting. But alas! the Man wants Esteem and Reputation, which hath a resemblance to Wind, being an aery thing which we must receive from others, and know not how long we must keep it, when we have it; the want of this will make all the rest insufficient for his satisfaction. Thus *Alexander*, who was more ambitious than great, after he had conquered the World, shed Tears, because he had not conquered more than one, being told by a Philosopher; that there was more than one. And all the Favours proud *Hammon* could enjoy upon Earth, could not make him happy, because he could not neglect the Captives neglect of him; nor could his

Greatness do him any Good ; if one Man only resisted it, and did not bow to it, so that we often repine at God's Providence by mistake. Therefore we often Envy the Great and Rich, as if those Advantages made them as happy, as they would a Good and Wise Man, when the Man courts a Favour to make him happy, which he cannot obtain, so that is is not what a Man hath, but what he desires that makes him happy or otherwise.

And to represent further the uncertainty of Temporal Felicities, as well as the small value we ought to put upon them, says he, there are a sort of vain Persons, who much resemble painted Clouds ; both being raised to such a Station, that makes most Men think them above them, being rendered more conspicuous by the Sunshine of the Princes Favour, which though it alters not their frail Natures, yet it adds a Lustre and Gaudiness, which attracts the Eyes, and perhaps the envy and respect of those that admire insignificant Outsides, but further, as the Clouds Sublimity and Conspicuousness, makes them not less airy and unsolid, they consisting of Vapours, drove about by every Wind ; so these fine People, notwithstanding their being exalted, are in themselves but slight, having no intrinsic nor solid weight, but are guided by their own Lusts and Passions, or by Interest as fickle and variable as the Wind. And though the Clouds seem great and high, and for some time darken the Sky, yet they are but of short continuance, and quickly fall down in Rain, or are dissipated and vanish ; so those great Persons, either descend by voluntary Humility

military and Repentance, or make amends for their past Usefulness or Mischief, by doing good, or after a while their splendor vanishes, without leaving behind them the least Token of their Greatness. And this happens not only to Favourites, but Princes themselves, and is often occasioned by the same Power that raised them.

To shew further, what a slight Opinion he had of the seeming prosperous Conditions of this Life, and what a true Judgment he made of them, we shall only add this Instance, says he, there are some Pleasures and Conditions in the World, which shew well enough at a distance, and are not only desired, but stir up envy, so that he that calmly looks upon them, alone enjoys them, since that which at a distance promises satisfaction, on a nearer fruition would be far from appearing so, and would as little gratify the Palate, as the Eye, and would be more uneasy and troublesom than desirable.

And as Mr. Boyle put not too high a value upon Prosperity and the Gifts of Fortune; so neither did he condemn or despise any one for his Poverty, says he, a Christian in this Life is often in a mean obscure Condition, always exposed to Oppressions and Afflictions, and those that take Notice of him, are apt to despise his homeliness. Thus the *Psalmist* complained, that *all the Waves passed over him*, nor are his Sorrows removed in the Intervals of tempestuous distresses. But when Sicknes or Persecutions have taken away his Life, and he is translated into a higher Region, Afflictions and Distresses will be left behind. And when

His Charitable and Christian Thoughts of the Poor.

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the Sensual are cloathed with Bodies as loathsome as the Mind, and as restless as their Consciences, his Body will acquire Noble Qualities, and the *Mortal Part shall be swallowed up of Life, that Perfection which is but in part shall be done away*, 2 Cor. 5. 4. and he who was slighted upon Earth, shall be received into the blest Society of Celestial Spirits, and be dignified by the Son of God. We are not therefore to judg of a Christians future state by the present, since *Mal. 3. 17.* it is said; *They shall be mine in the Day, when I make up my special Treasure*, so that we may judg of the Christian's Condition, as St. John hath said of it, *We are now the Sons of God, and it does not yet appear, what we shall be, but we know, that when we shall appear we shall be like him*, 2 John 3. 2. which far transcends the most glorious Things here. Thus Mr. Boyle though he enjoyed a plentiful Estate himself, was sensible of the sufferings of his fellow Creatures here, and knew that one Day they would appear, before one that would not slight them, but value them the more, since they served him more than those he had blessed with the fruition of transitory and temporal Goods, and that they would be rewarded for their Sufferings with more valuable Benefits. He was so pathetically affected with the Afflictions of those in Adversity, that like a good Christian, he seemed to be a fellow Sufferer with them; and as our Saviour was afflicted for us, and by *his Stripes we are healed*, and when Christians were persecuted, cried out, *Saul, Saul, why persecutest thou me*, so Mr. Boyle had compassion on those in distress, and not only

only plentifully relieved them, but excited others to do the same.

How far Mr. Boyle was exemplary in the Vertue of Charity we have already shewn; to what we have there said, we shall here add his Thoughts of Liberality, which though it be a degree above Charity, it exceeded not the bounds of his, which no doubt was restored to him in that place, where he now reaps the advantage in a Treasure which cannot corrupt. His Thoughts of Liberality, he communicates in Words to this purpose, and says, He who sees a Liberal Person part with Money freely, which others are fond of, being unacquainted with the Effects of Faith, and the Promises of the Gospel, may think it folly or profuseness, and that the Person is fallen out with his Money. But he that considers the future Prospect, and that the Scripture bids the Disciples, *make themselves Friends with the uncertain Mammon, that when we fail, they may receive us into Everlasting Habitations.* And further, if he considers the transitory Nature of worldly Possessions, their perishing or ours, being sure to make a Divorce, and the inestimable Reward in Heaven, he will conclude this way of parting with it, the way to preserve it, exchanging it for Riches he shall never loose. So that a charitable use of Wealth, is only parting with what we cannot long keep; for that which will not fade, and though we have not them in kind, yet considering *Riches* under the Notion of *Goods*, we shall procure *there*, what *here*, they could never afford us, Happiness.

*His
Thoughts of
Liberality.*

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And to illustrate his Thoughts of Liberality, he elsewhere brings an Instance of a Fisherman throwing a Bait plentifully into a River over Night; says he, those that saw the Fisherman throw his bait into the Water and go away, might think him very wastful to bury his Corn, and throw his Baits to be eat up by the Fish, who would perhaps never come to thank him for them. But those that knew how profitable it was, would not think it a folly, but a piece of prudence; for though he caught what he threw away, yet he was rewarded with things of more value. Thus though the World may esteem a generous Almsgiver a Fool and a Prodigal, because he seems to throw away what he hath in Possession, without hopes of recovering any Goods of the like Nature; yet those that consider a future state, and the final Issue of temporal Things, will commend his Wisdom for parting with such Trifles, for more permanent Riches. Nor will parting with a greater or less Estate alter the Case, no more than parting with greater or less grains of Corn do the Fisherman's; for Heaven is more inestimable than the greatest value we can give for it, and he who is of more value than all the World, says, that such as plentifully sow, shall likewise reap, and receive proportionable Rewards; and as the Fisherman is sure of no greater Reward than Fishes, for what he there threw into the Water; a Christian Adventurer may promise himself an hundred fold in this World, and Life Everlasting in the other. And therefore as St. Paul says, if we regard not things Temporal, but the Invisible Ones which are Eternal,

ternal, the Exhortation will be both Rational and Pious, which is after his Discourse of a Future State thus. *Wherefore my beloved Brethren, be ye stedfast, immoveable, always abounding in the Work of the Lord, for as much as ye know, that your Labour is not in vain in the Lord.*

And as the Honourable Mr. Boyle thought what was liberally layed out in good Acts of Christianity, was well bestowed, since what is given to the Poor is only lent unto the Lord, who will plentifully repay the Stock with Interest, so he as much condemned Profuseness, which might hinder and obstruct such good Acts, by burying such Talents in things unnecessary and extravagantly superfluous; says he, it is not strange the fair Sex should delight in handfom things about them, since that Quality they find admired in themselves; nor is it commendable, that Persons of Quality should have a retiring place neatly adorned, that it may invite them to be alone, to Read or Meditate, provided those Ornaments are not so costly, as to hinder Charity, or so gaudy, as to distract Devotion; for the old Serpent hath not only a variety of Wiles, but suits them to the temper of the Person he hath to deal with; and if he cannot eradicate the Inclinations of Ladies vertuously inclined, from the best part of Religion, Charity; he will endeavour to blast and render them fruitless, and he thinks he hath done a great part of his Work, if he can but hinder them from doing Good, if he cannot tempt them to do Evil; and encourages them to lay out so much in unnecessary Expences, that it disables them from applying any considerable

*His
Thoughts of
Profuseness.*

considerable part of their Estates, to the End God bestowed them; for by that time their House, Closet, &c. are furnished with the Ornaments that Vanity and Emulation call for, they have nothing left for Charity, nor perhaps for Justice, the Creditor being often turned back as well as the Beggar, if not made a Beggar too by ruinous Delays. And great Fortunes may be exhausted by gratifying Ambition, nothing putting Limits to it, but Discretion; Custom having not yet regulated that Vanity.

But most People think this excusable, because not forbid in Scripture, and therefore it cannot be sinful, but though these sumptuous Closets are not unlawful in their own Natures, yet Circumstances may make them so, that being in Effect ill, which hinders us from doing well; and our Saviour who discommended a Woman for wearing Gold, would never countenance sumptuous Ornaments upon a Wall. These cannot pray for us, but the Poor may or cry out against us. *Dives* in Hell is charged with no other Crimes, but that he faired sumptuously and dressed fine, and neglected the Poor, and a few such rich Closets might easily be enlarged into an Hospital. A small part of these Superfluities might relieve the Necessities of a great many Families, and purchase Heaven at an easier Rate than to furnish a Closet. Besides, this Practice goes not without Punishment in this World, since they often live in want in the midst of Plenty, these trifles costing so much, that they are forced to deny themselves necessities or things convenient,

venient, for those that are neither: and often sacrifice their innocent Desires to their Vanity. But those that find their Happiness in making others so, take more Satisfaction in feeding hungry Mouths, than idle Eyes. And he that encourages expensive ways of Vanity, is worse to the Poor, than one that destroys Alms-houses and Hospitals; and by Example is uncharitable after Death, and does harm, when Misers are wont to do good. To conclude, we ought not to make the Dictates of Piety, comply with those of Custom, and it is better to want a fine Closet than Charity.

Having thus briefly represented, how much Mr. Boyle took care to furnish himself with all those Accomplishments that might become a Christian, and what Notions he had of most of those Vertues which he not only practised, but endeavoured to instruct others in, we shall proceed to that which may be called a Vertue, which is Industry; in this he was an extraordinary Example, as well as, as great an Encourager of it; on this Occasion, he says, the wise Man's Council was, *Whatever our Hand finds to do, we should do it with all our Might, &c.* but most Men endeavour to prolong Life, being more solicitous to live long than well, and would not endure the least hardship, to do the greatest good; and would rather loose a hundred Opportunities of serving God, than an Hours sleep, with a pretence of regarding their Health. And those jolly People, who use successive Diversions to avoid serious Thoughts, make their Lives only useless but not immortal. And acute Diseases, as well as those that

His Encouragement and Example of Industry.

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are contagious, besides Accidents, shorten so many Peoples Days, more than Diligence and Industry destroy, by the Duties of Religion or Curiosity, that we need not fear to use our Bodies for the Interest of our Souls; for our Saviour said it was meet to do the Will of God that sent him, and to accomplish his Work. The Trouble of Sweating, Thirst and Undressing, are just recompenced by Eating and Drinking and Sleeping; and to confine an honest Man from the Exercise of Vertue, and the Pursuit of Knowledge, in hopes to lengthen his Life, is to destroy the end and use of it; and is all one, as to offer him a Horse which he must not ride, or a Perspective Glass with a caution not to pull it out, lest the Air should damnify the Glasses. It would scarce be worth a Rational Souls while, to tend the Body if not allowed to use it. And they who are so much afraid of spending their Spirits, are worse than Misers, both being to be parted with for the Uses they were designed, for the later by their nearness may avoid spending their Money, but Laziness will not hinder the Consumption of Time. Yet profuseness in the one, is to be avoided as well as in the other. But if I had my choice, whether I should live long and a lazy Life, or to have my Life Glorious, though in a shorter number of Days, I had rather spend my Life quickly, than uselessly; for he that shortens his Life with seeking after Eternity, sooner enters upon an inexhaustible stock of it; whereas those that would lengthen their Lives by Laziness, add to the Number of their Years, rather than the Length of their Days.

On this occasion, I shall add a Reflection he made on a Thief in a Candle, in the time of a fit of Sickneſs, which he afterwards recovered of, ſays he, the dim Light of the Candle being ſuddenly increaſed, I perceived it was occaſioned by a Thief, which had waſted down a great deal of the Tallow, and which would have ſerved the reſt ſo; had it not been prevented. Which occaſioned me to think, that though the Thief made the Candle ſhine more brightly, yet ſince it made an irregular waſte, I ordered it to be taken away, which put me in mind of what *Pharoah's* forgetful Butler ſaid *I do remember my Faults this day*, Gen. 41. 9. for though I could eaſily abſtain from other kinds of Intemperance; yet to ſtudying I have been too indulgent; and though in that Exerciſe there may be Exceſſes, yet ſince they tend to the Improvement of Knowledge, and the Exerciſe of Piety, it maybe allowable, if not commendable, to ſpend our time in purſuing ſuch ends; for which Reaſon, Sickneſs is more formidable, for diſabling us to learn or teach, than as it is attended with Pain and Danger, and when it hath hindered me from purſuing what I deſigned, it makes me more uneaſy than what I ſuffer. But my Body is ſooner weary than my Mind, and I have been more tired with Contemplation than with riding Poſt. Therefore, though a Candle is to conſume to light others, yet the Thief would have waſted it too faſt, and therefore I have thought it convenient for the future, to favour what ſtrength I have left, and endeavour to make it ſhine longer, though more dimly, which Abſtinence and Self.

Sel-denial will be more difficult, than if Wine or Women were the Objects of my Delight; but if I should not always perform what I intend, I shall easily excuse my self, if I a little hasten the End of my Life to attain the Ends of it. Thus this pious and studious Person, never thought he could take too much Pains, to promote the good of his own Soul, or to enrich it with noble Endowments, which might extend the Sphere of his own Knowledg, or enable him to be useful in instructing and communicating his Discoveries to his Fellow Creatures.

*His hatred
of Sin.*

Hitherto we have given the Reader a short View of some Instances, that argue the great Progress Mr. Boyle had made in the Study and Practice of Divinity, and the Exercise of those Vertues that might secure so good a Christian Tranquility of Mind here on Earth, and a good Foundation for certain Hopes of Future Felicity, and the Reward of a well run Course, that Crown of Glory he now enjoys, in a state that admits of no change but is always continued in a full Fruition of Eternal Happiness. Having therefore endeavoured to represent his Vertues, though not in their true Lustre, which he alone could illustrate by his Practice of them, we shall next proceed to shew his aversion to Sin, and his hatred to Vice, his great Soul utterly abhorring any thing that was an Abomination to that great Lord of Heaven and Earth, and the great God that made him; the Omnipotent Author of the Universe.

And

And as he had a Hatred and an Aversion to Sin, which is next a kin to the possessing of Vertue, the preventing and caution against the Growth of Distempers being a kind of Cure; so he had not only the Seeds of Vertue well rooted in his mind, which might prevent the Enchroachments of Vice, but he furnished others with the same Precautions, not only by instilling Vertues, but by creating in them an Aversion to the contrary, endeavouring both to Prevent and Cure. And *First*, To prevent the growth and increase of Vice, he recommends the Early Study of Divinity, the richest Ornaments of Learning and Eloquence, being merited by the Study of Theology. We have before observed, how much he urged as well as pursued the Study of Divinity; and as we there brought Instances, to shew, how careful he was to lay the Foundation of Vertue; we shall now take Notice, how he applyed the same as a Bull-work against Vice and Immorality; says he, most Men are desirous to enjoy as well as leave a good Name behind them; to which purpose, they take a great deal of Pains to hide and disguise their sins, and to convey a good Name to Posterity by flattering Epitaphs. Now pious Persons, who can write well, may easily gain the Reputation of being Vertuous as well as Knowing, and will hereafter receive a double Reward; for they that are *Wise, shall shine as the brightness of the Firmament, and they that turn many to Righteousness, as the Stars for ever and ever. Dan. 12. 3.* It is a great Complaint amongst Zealous Persons, that more Wits and Grandees, pervert God's Gifts to the Service

The early Study of Divinity a step to prevent vicious Inclinations.

of Idols of their own setting up, like the degenerate Jewish Church, of whom God complains, *that she did not know, that he gave her the Corn and Wine, and Oyl, and multiplyed her Silver and her Gold, which they prepared for Baal, Hos. 2. 8.* then imitate David and his Princes, who consecrated their Gold, Silver and pretious Stones, towards enriching the Temple, *1 Chron. 29.* and perfumed their Offerings with this Acknowledgment. *All things come of thee, and thine own have we given thee. v. 14.* But though a great many Persons of Note, and great Wits think not of that saying, *what hast thou that thou didst not receive, 1 Cor. 4. 7.* but like the Clouds obscure those Rays that elevate them; yet I doubt not, but that as several Royal Pens have been employed in examining the Scripture, and as God made choice of the wisest, and most learned Persons in *Egypt*, to write down, what he dictated; so he will one day excite both the Grandees and Wits, by their Devotion and Service, to improve the Scriptures, and make amends for the Injuries irreligious Parts and Greatness have done it.

And the early Study of Divinity would indeed easily engage the greatest Wits in it's cause, and it were to be wished, that witty Writers were more employed in behalf of Religion, that their Services might endear it to them; for Men are as apt to engage themselves by the kindness they do, as by those they receive. And to encourage Men of Parts to employ their Pens on so good a Subject as the Scriptures. I shall represent, that that Immortality of Name, which those acquire, that write upon
other

other Subjects, may be obtained by Divine Ones, nor can the Subject diminish their Fame, except in comparison to a greater Good, Men looking upon their own Glory as an Accession to God's; nor does it hinder others from praising the Wit and Eloquence they employ in the praising of God; as Beauty was admirable in Vestals, and an Excellent Voice may ravish us with a Psalm; or as Jewels, which adorn it, shone in *Aaron's* Breast-plate; for, as *Godliness is profitable unto all things, having the promise of the Life that now is, and of what is to come, 1 Tim. 4. 8.* and as the hundred fold now in this time, is not inconsistent with the *Eternal Life in the World to come, Mark 10. 30.* so a pious Writer may at once involve his Name, both in the Books of Life and Fame, and like holy *David* wear a Crown of Lawrel both here, and hereafter, that unfading Crown of Glory, *1 Pet. 5. 4.*

And though we are so sinful, that we cannot relish any thing that would reclaim us; yet less Licentious Times will make amends for the Omissions of the Present, with Gratitude to them that conveigh those Truths to others, in the best dress they will admit. And though *Solomon* communicated so many Songs and Proverbs as well as the Natures of Animals of several Kinds, and the History of Plants, from the Cedar of *Libanus* even to the Hysop, that springeth out of the Wall, *1 Kings 31. 32, 33.* yet those Treatises designed for the Instruction of the Church remain, though the other are lost. And as the *Manna*, the *Israelites* gathered for Domestick Uses, remained not good for above a

Day or two, yet that which was laid in the Sanctuary to perpetuate it, lasted whole Ages uncorrupted; so those Books, which only serve our private Interest or Fame seldom live long; whereas those built for the Honour of God, are more lasting and durable. And those uneloquent Expositions of the Antient Jews, that have continued for so many Ages, only for the sake of the Subject, give us Reason to know, that the Scripture makes the Names of those that illustrate it as immortal as it self. And such an Employment according to the Psalmist, *I have more understanding than all my Teachers, because thy Testimony is my Meditation*, Psalm. 119. 99. invites God to encrease our Parts, as he that had most Talents committed to him, as a reward for his service improving of them, was intrusted with more, *Mat. 25. 28*. And he who entertained our Saviour with a few Cups of Wine, had Vessels of Water turned into Wine, *John 2. 10*. And certainly great Wits, when they incline themselves to write Divinity, improve those Subjects, so capable of Improvement, and a little time Signalizes their Pens, being already furnished with the requisites of Good Writers; so that they need but apply their Knowledge and Eloquence to make them handle Divine Subjects Elaborately. Thus Hiram used the skill he had learned in Tyre successfully, in building and adorning the Temple of God, *1 Kings 7. 13, 14. &c.* And Jephthah shewed his Courage and Art, which raised his Name in the Land of Tob, in defending the Cause and Victoriously defeating the Enemies of God, *Judg. 11*. And the Primitive Times fur-

nish us with several Instances of this; as the Productions of the Stupendious Wit, *St. Austin* in an unregenerated State, when he was converted to the Catholick Faith and Piety.

And as the Honourable Author thus endeavoured to promote Piety, and encouraged others to it, that they might be the better able to oppose Vice; so as a further Encouragement, he proposes the Advantages and Satisfaction in doing well; and tells us, that we ought not only to do well our Selves, but that it is our Duty to do and practise what we teach others; says he, there is a difference betwixt writing fine Characters of Vertue, and Possessing of it, and it would be ridiculous for a Painter to think himself handsome, because he can draw Faces so; and it would be the same to be proud of devout Composures, and to phancy our selves Masters of Piety, because we could make others in Love with it. The Devil will let us write well; if we will forbear doing well. Our Wars against Vice, are much like *Alexander's*, not out of Anger, but Glory, and we often use the Enemy with more Curtesy when Conquered, than those for whose sakes we Conquered, and Vanity, as often as Zeal moves us to oppose Vice, and if we are Proud of it, we do but like Witches, when they turn Exorcists, joyn with Satan to cast out the Devil.

To which he adds, that it happens to us in this Case, as it did once to *Gideon*, *Jud. 8. 24, 25.* who with the Spoils of God and *Israel* made an Idol, which in the end was his, and his

House's Snare. It was Instructive and a Divine Admonition our Saviour gave his Apostles, when they told him, their Power of casting out Devils, *Notwithstanding in this rejoyce not, that Spirits are Subject to you, but rather rejoyce, that your Names are written in Heaven,* and though Judas had this Power, yet afterwards, *Satan entered into Judas, and it had been good for him, that he had never been born.* And though as Solomon tells us, *he that minneth Souls is wise,* yet he that does as he teaches, *shall be called great in the Kingdom of Heaven,* Mat. 5. 19. and we are told, many in the last Day will plead, *that in his Name they have not only Prophefied or Preached, but cast out Devils,* Mat. 7. 22, 23. and yet they may do many Wonderful Works, yet be Workers of Iniquity. A true Christian should always be willing to communicate useful Discoveries, and should consider the best Notions he can frame of Vertue, more as Engagements to it, than as Arguments of it, and in Devout Instructions, Charity ought to begin at home; so that he ought to make himself a Votary, as well as an Advocate for Piety. And as the Wise Men informed those at *Jerusalem* of the Star in the East, and followed it themselves till it came to Christ; so to get a Title to our Saviour. *A Good Man out of the Good Treasure of his Heart, brings forth Good Things,* Luke 6. 49. his Celebrations of Vertue being taken from his Experience, as Nurses feed themselves to Nourish their Infants, giving nothing to them, which hath not first been digested in their own Breast, *lest whilst he Preaches to others, himself becomes a cast away.*

And

And as he represents it the Duty of those that teach others, that they should practice the same themselves, and not only teach by Precepts, but also by good Example; so he likewise gives us his Opinion after what manner Teachers ought to communicate that Spiritual Food, which they have first reduced to Practice. And *first*, He thought it the Duty of Preachers, to communicate the Word of God to their Hearers, sincerely, and in the genuin and true Sense of the Gospel, without wresting it to their own Opinions or wild Fancies, making the Scriptures say, what they think or imagin: so that some seem to teach their Auditory a System of their own Invention, rather than the Doctrin of Jesus Christ; says he, as the Moon communicates to the Earth Light, which she receives from the Sun, so the Ministers of the Gospel communicate Light to the rest of Mankind, which they received from the Son of Righteousness. And as the Moon shines with no other Light, than what is afforded by the true Sun, so the true Preachers mix not their own Inventions or Human Traditions, with the sincere Light of Revelation, it being the safest for the Church; it being requisite Christians should receive the true Bread of Life, as the Jews did the Material Bread; as Christ, *Mat. 15. 36.* first brake the Bread, which his Disciples afterwards gave to the People, so that they might say, with St. Paul, *1 Cor. 11. 3. I have received of the Lord, that which I delivered unto thee.*

And to confirm his Opinion in this respect, as well as to shew all Disputes and Niceties are of ill Consequence, he elsewhere says, Interested

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sted Persons, and Byassed Judgments, rest Texts of Scripture to countenance their Prejudices, though they make those Texts disagree with one another, to make them comply with their partial Interpretations. So that some things hard to be understood in St. Paul's Epistles, and other parts of Scripture, are said by St. Peter, by the *unlearned and unstable wrested to their own Destruction*. When Words are taken in their obvious Acceptation, except the Context shews Reason to the contrary, they are easily understood, but when prejudiced Wits make an Author speak their Sense instead of his own, and considering the different Acceptations of Words and Phrases, make use of that which best serves their Turn, and because it hath such a Signification in other Places, it must have the same in this, he must be very Cautious, that prevents his Words from being taken in a different Sense from his own. Thus our Laws which were designed to prevent strife, and are expressed in plain Words, are so perverted by some Wits, that private Mens Cases are not only puzzled, but Princes and Subjects vary, and kill and execute one another. And thus in Scripture, we often impute our own faults and deficiencies to it; but the best way to prevent this is, not to quarrel about Niceties, since answering their Objections convinces them not of their Incredulity; and by justifying the Truth of the Scriptures, we only shew our Reverence to them, without making them the better for it; but the only way is to assert the Truth of the Scriptures, as of Divine Origin, which gives Men reason to impute their Scruples to their own Mistakes, as when

our Saviour uttered a dark Saying, which puzzled his Disciples, they did not forsake him, but St. Peter in the Name of the rest says, *Thou hast the Words of Eternal Life, and we believe, and are sure, that thou art the Christ, the Son of the Living God, John 6. 60, 66, 68, 69.* where one comprehensive Truth was sufficient to silence particular Scruples.

And to shew us, that the Scripture ought to be the chief Guide and Instructor of our Lives and Conversation, and the Rules of our Actions, without the Glosses and false Lights imposed upon us by Men; he tells us, that as the most elevated Subjects, are such as have God for their Object; so no Book can tell us better, the Nature and Thoughts of God, than the Bible; nay, no other Book can tell us any thing of some of those sublime Subjects, except the Bible. But since some prefer other Books in reference to a good Life, we are to consider, that there are other things requisite to make a Man live well, than to tell them what to do, and how they ought to do it, it being requisite in order to live a good Life, that we overcome our Appetites and Inclinations; besides Perseverance is attended with Hardships and Dangers; so that good Precepts only are not sufficient to engage a Man to a good Life, which inclines them not to conform to Precepts, that are good, but only serve to make them believe them so. But it is much more valuable, to give us the Scripture does, the most prevalent Motives of Piety and Vertue, and Dissuasives from Vice, and Promises of Rewards and Punishments according to our Actions. Now as the Bible is furnished with good Precepts, and also the

those stronger Motives, which no Book can do, that is not divinely inspired; so we have no Reason to believe meer Man, so much as God himself, what he promises or threatens depending on his free Will, which cannot be known without Revelation, which is contained in no other Book but the Bible. And therefore St. Paul might well ascribe to our Saviour, *That he had brought Life, and Immortality to Life thro' the Gospel*, 2 Tim. 1. 10. And as Hope is the greatest Motive to engage Men in a virtuous Life, St. Peter says, a Christian Hope depends on a Revealed Truth, and thanks God, who according to his abundant Mercy, begot us to lively Hope, by the Resurrection of Jesus Christ from the dead, 1 Pet. 1. 9. And what hopes, through the Influence the Scripture gives us of the Knowledge of God and Christ, we may have of a good Life, and through the Promises, which none but he can make, or those that he sent, will appear from the same Apostle, who says, that God, according to his Divine Power gives unto us all things that pertain to Life and Godliness, through the Knowledge of him that hath called us to Glory and Vertue, 2 Pet. 1. 2, 3, 4. and he after tells us of being made Partakers of the Divine Nature, escaping the Corruption that is in the World through Lust, by those Promises God hath made us. Whence it appears, that as the Scripture is the rule and guide of our Actions, it is sufficient for us to be taught, what is there contained; and that the true sense of the Scripture is what we ought to learn: and that we ought not to be misguided, by the Notions and Phancies of those that wrest the Scripture from it's proper Sense. And

And as it is a fault in some Preachers to start Controversies, and dispute against frivolous Niceties, which rather in effect countenance insignificant Errors, which would otherwise not be taken Notice of, to shew his dislike of such Proceedings, he makes this Reflection, on the sight of a Kite in a windy Day, says he, if the Air was Calm, this Kite would be disregarded, but being raised by contrary Winds, makes it soar so high, that it attracts our Eyes as well as the Boys, and sometimes mounts out of sight. Which may shew us a resemblance of the Errors about Religion, when maintained by Men resolute and viceless; for some of their Conceits are so fond and groundless, that they would soon vanish of themselves, if they did not meet with a too early Opposition. And as Kites disregarded in a Calm, are elevated with contrary Winds, so erroneous Opinions would soon be disregarded if not opposed.

But to represent further, what Mr. Boyle hath said on other Occasions in respect of Preaching, he says, When a Learned and Eloquent as well as Pious Person is distributing Sermons, where the Productions of the Tongue or Pen are adorned with the advantages of Learning and Wit, I shall not blame his expence of Time, whether employed in speculative Notions in Theology, or on critical Enquiries into Absolute Rites or Disputable Etymologies, or Rhetorical Flourishes of Language, or any thing else, that hath not a Tendency directly to promote Piety or kindle Devotion; for as Man is subject to several Wants, and is furnished with allowable Appetites, and several Faculties

Faculties and Abilities to gratify them; so the Pen may be usually employed to teach Theological Truths or excite Zeal. Nay further, Wise Men may prosecute the same design, without doing it all the same way, and notwithstanding the particular difference of their Methods, they may have the same aim, and proceed in a rational way. Therefore if a Man studiously prosecutes, and spends his Time in florid Composures, I cannot be forwards in censuring him as an Effeminate or Useless Writer; for pious and laudable ways may be so differently promoted, by removing Objections or other Impediments, that there may be a Rational Design, of reforming with those things that delight a nicer sort of Readers, not regarding any thing, unless well set out with Flowers of Rhetorick.

But as Rhetorick and fine Expressions have their Advantages; so they are not without their Disadvantages, both in respect of the Preacher and the Hearer. To communicate his Opinion in this Respect, Mr. *Boyle* makes these Reflections on a Looking-Glass, that had a very fine Frame; says he, the Frame of this Glass is so curious, that it is sufficient to invite both our Admiration and Curiosity; and for a much like Reason, I admire or at least approve Eloquence in Sermons; for as this Glass in a common Frame would not have invited us to consult it; so a Sermon by some may be disregarded, though it's Substance be Excellent, and as the Workmanship of the Glass attracts our Eyes, though it shews us not our Face, so Wit and fine Language, though they be no Essential

Part of a Sermon, often invite Men to hear or read it. And as the Frame at once attracts and pleases the Eye, without representing the Beholders Face; so fine Expressions are not able to represent the hearers Condition, nor shew him, what is otherwise than it should be, which is the use of a Looking-Glass; therefore as a Man will not judg of the Goodness of a Glass, by the fineness of the Frame, but by representing his Face; and will not think the worse of it, for shewing his Blemishes; so a wise Christian will not judg of a Sermon by the Language, but the Divinity, and will not think the worse of it, for shewing him his Errors. And as a gaudy Frame often attracts Chrildrens Eyes, and makes them regardless of any thing else, and even the most useful Part of it; so too much Rhetorick makes some Men, take no Notice of the more instructive Part of the Discourse; and the Witty Part are so much more used to judg of Sermons than themselves, that they use them only, as if a Man should only praise the Frame, without caring to make use of the Glass it self, to mend any of his Faults. Thus those Wits only use Sermons to applaud the Expressions or Contrivance without regarding the Doctrin. And it is too often, *like People, like Priests*; some taking more pains to make their Hearers such, than to reform them, taking more care to make their Expressions than Hearers Good, rather coveting they should applaud their Preaching than condemn themselves, being better pleased with their Praises than to hear their Sighs, and chusing rather to tickle their Ears, than to sting their Consciences, such may invert St.

Paul's

Paul's Saying, that he Preaches not *Christ Crucified*, but himself; and if he declaims against Vice, it is such affected Anger, that he fences with Sin rather than seeks to destroy it, exercising his skill, rather than hatred; being more solicitous to be an Orator than a Divine. Again, he is more concerned to remember his own Sermons, than that his Hearers should. In such Sermons little is spoke from the Heart, or effect those of the Hearers, both sides being agreed to deceive themselves, so that instead of aiming at the Conversion of Sinners; the Minister thinks he hath done his Part, when he hath shewn his Wit, and the Hearer his, when he hath commended it.

*Remissness
in Hearers
Detrimen-
tal to Piety
and Virtue.*

Having thus given Mr. Boyle's Opinion of some Errors in Preaching, we shall in the next place, represent some Passages, in which he condemns the remissness of Hearers. Their Neglect hath been in some Measure taken Notice of in the foregoing Paragraph; to which we shall add, what he hath elsewhere observed in his occasional Reflections, says he, as the Moon represents the Duty of a Preacher; so it may of a Hearer; for as it would be ingrateful in respect of the Author, not to make use of the Light of the Sun by the Moon, or to think her useless, because she communicates not heat as well as light, so it would be ingrateful for us not to acknowledge as Hearers, or to be guided by the Conspicuous Endowments of Learning and Eloquence of Scholars, though they were but illustrated and warmed by the Beams they reflect. And therefore as Oysters and other shell Fish thrive at the Increase of the Moon, though

her Light hath no heat to attend it, and tho' she is not without spots at the full; so devout Hearers will receive Instructions from those Preachers whose Illuminations have neither Zeal nor Charity, and whose greatest Lustre is not free from spots and blemishes. And as the Moon by Similitudes may set forth the Vertues and Vices of the Mind, so it may give us an Emblem of our Condition; for as the Moon sometimes is Eclipsed, and undergoes several Changes, and at the full is never free from dark spots; so Men's minds are partly in the dark, and partly in the light, being more or less illustrated with Heavenly Rays of Light, and Joy, and not only some times dejected by Disconsolation, but at the best know but in Part, and are partly blemished by their Native Imperfections.

But to manifest Mr. Boyle's Opinion further in relation to the Duty of Hearers, we shall take Notice, that elsewhere he observes, that many a Pious Person, who is careful to attend upon God's Ordinances, and to place himself near them, is apt to be Discouraged from pursuing thole Duties by considering how little he remembers of what he hears, and is inclined therefore to think, that he shall receive as little benefit for the future. But though it be a fault or unhappiness to loose so much of so pretious a Doctrin as that of Salvation, yet it is less mischievous to forget Sermons, than to forsake the hearing of them; the one being occasioned by a weak Memory, and the other by a depraved Will perverted by Laziness, Impatience or some other Fault. It would be as reasonable
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for one that grows not fat with eating and drinking in a Dysentery or a Consumption, to renounce doing so. But Pious and Melancholly Persons are too partial to be Judges against themselves of their own State, being not so apt to forget any thing, as that Charity begins at home; but they may remember, that Ground that is equally good is not so fruitful, some bringing forth an Hundred, some Sixty, and some Thirty Fold, and yet all of them are esteemed Good; and as bad Men that have lost their Senses, seldom complain of the want of them; so those that are void of Grace, seldom are sorry, for their weakness. It is no sign of Piety to deplore their want of Proficiency. Preaching I fear is oftner a *Death unto Death than Life unto Life*; yet though it aggravates those sins committed in defiance of it, it may prevent a great many, and he that is often put in mind of God, Heaven and Hell, and his Duty, will have his Conscience in a better state, than he who never is told of such things. And if we compare a desponding Christian with one that flies from Instructions, we shall have Reason to Conclude, that Preaching may be gradually Instructive, as the Moisture of a River gradually imparts it's Fertility, to the Land by unperceived Passages: for though a great deal runs by, yet some will stay by the way, which we may discern by the Effects: For remembering most does not always make Sermons do the most good; Water in a Pond making the Borders not the Bottom Fertile, and a Sermon does more good by affecting the Understanding and the Affections, than the Memory, and if we frequent

frequent God's Ordinances with sincere Intentions, Despondents may not be Non-proficients, and though the Seeds of Regeneration grew not hastily, yet by Degrees they may come to Maturity. To Conclude, if a Sermon makes a Man Good, or keeps him so, the Effects are not to be estimated by what we remember, but by our Good Resolves. And as one having bathed himself in a River, took Notice, that though the greatest Part of the River run past him, without doing any Good; and though when he went out of it, he carried very little with him, yet whilst he was in it, the stream washed away the foulness of his skin; And likewise, both cooled his intemperate heat which made him faint, and helped him to a good Stomach, which continued some time after. Thus a Sermon, though it hath not afforded me the Advantages, that others might make of it, and though when I went away, I found that I remembered but little of it, yet it had that Effect upon my Mind, to move away a great many Impurities; besides I found that such Sermons allayed the inordinate heats of my desires, which Temptations excited, refreshing my Spirits, and raised my Appetite to the Means of Grace, which are the true Aliments of Piety. And though Sermons do not do me all the Good they might; yet I dare not forsake them, though I forget them, since it is some good to make a Man better than he was, and to create a Disposition towards being better.

But to manifest Mr. Boyle's Thoughts both of Preachers and their Hearers, a little further he says, in another place, and upon another

occasion. Many Good Men, are not so well inclined as they ought to be, to admit the Precepts of Vertue; when those that teach them do not Practise what they teach. And few are willing to take advice from one, who does not follow it himself. And some will scarce read a Book except it comes from the Hand of an Angel, like that of *St. John* in the *Apocalypse*; but it would be much to the Injury of Scriptures and Reason, if Personal Faults should hinder them from doing good. And since the Gospel according to the *Etymology* of the Word, signifies it's being welcom News, and it is a pitty those that teach it should not answer *David's* Character of *Achimaz*, he is a Good Man and brings Good Things. But there is no Reason Truth should lose it's Esteem for the Faults of the Proposer: when *Noah* rose from his Warning and Prophesied, the Event answered his Predictions. Our Saviour instructing his Disciples, about the *Scribes* and *Pharisees*, who sat in *Moses his Chair*, ordered them to conform to their Doctrin but not imitate their Example: and the Wise Men found Christ at *Bethlehem* though the *Priests* and *Pharisees* did not go along with them. And the Prophets Prescription though conveyed by *Gehazi* cured the *Afflicted* General of his Leprosy, who by his unworthy Carriage in that Matter, transplanted the Distemper to himself and his Posterity. We are therefore to Consider Sermons more than Preachers; for as in a Burning-Glass the Sun Beams, only illustrate, but do not heat in the passage, yet kindle Subjects duly disposed; so Truths which do but enlighten the Preacher

may inflame the Hearer, and kindle the Love of God; and as Perfumes set on Fire by a burning-glass are as Odoriferous, as if fired by a burning Coal; so Devotion kindled by an indelicate Preacher is as acceptable to God, as if otherwise. And what is said in *Kings of Elisha's* Bones contains a greater Miracle in the Historical than in the Allegorical Sense, it being no such Wonder in that Sense for a Dead Prophet to raise a Man to Life.

Thus we have briefly represented Mr. Boyle's Opinion, both in Preaching and Hearing; and indeed if Preachers were more zealous in teaching Christians their Duty, and shewing them the Paths of Vertue, and Hearers were as diligent to learn; if Ministers were more Exemplary in their Lives and Conversations, and their Hearers as willing to follow good Examples, the Growth and Practice of Christianity would not only make the World a great deal better, but would prevent the spreading of Immorality, Profaneness and Atheism, which hath, by such neglects, gained too much Ground in the World, and as Mr. Boyle observes, if the Rules of Christianity were as much made the Subject of Sermons as those of Rhetorick, and they took but as much Pains to shew themselves Christians as Orators, and to communicate Precepts of Vertue as Specimens of their Wit and Learning, the Seeds of Piety would be so thick spread, that there would be no room for those of Vice. But we speak not this in General Terms, as if all Men were so full of Vanity or Negligent of their Duty: God forbid, a Number of pious Pastors and

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Practical

Practical Teachers should not make amends for the Faults of those that lead their Sheep astray, and through *Laberinths* of Notional airy Paths, instead of the solid Fundamental way to Heaven.

But since the Vanity and self Opinion of some Teachers as well as Hearers may thus neglect the true Wisdom, which teaches the way to Salvation, and their Wisdom is like *Adam's*, who eat the forbidden Fruit, and was wise to his own Destruction as well as that of Mankind, we thought fit to represent, in this place, what the Honourable Mr. *Boyle* hath said on that occasion. And since the want of Good Principles, and the solid Rules of Vertue and Morality, may occasion Men to give way to those Pernicious Seeds of Atheism and Immorality, which are destructive to a great many, and Prevent the growth of Piety and Religion, we shall in the next place proceed to those other Prejudices, which may encourage Men in those gross Mistakes. And since, next to the neglect in Teaching and Hearing, which might lay a Good Foundation, *Evil Communications* may corrupt Good Manners, or supplant them; we shall represent what the Honourable Mr. *Boyle* thought of the ill Effects of Bad Company, ill Examples and Conversation.

His
Thoughts of
Bad Com-
pany.

And as the want of Learning what is Good, is a kind of giving way to what is ill; so the later may easily take place, where a Person is not prepossessed with the former, and nothing can sooner encourage ill, than bad Example and Evil Communications. What Mr. *Boyle* thought of Bad Company will appear from some

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some Passages, which are worthy our Observation. Observing then the Disposition of the Loadstone to attract Iron, and the Inclination of the later to be attracted to the former; he says, it might give us good Directions in the choice of Company, a thing of much Importance; for as it is a good Direction to know, whether a Man be bad or good, wise or foolish; so it is a good way to make him so; Conversation disposing our Minds & Manners to a resemblance with those we converse with, most Men complying with Customs and Fashions in those we esteem or would be esteemed by. Yet there is a great deal of difference betwixt keeping Company with some Men, and making it our choice to do so; for when the Exigency of our Calling obliges us to bad Company, this may be an Infelicity without a fault, but it must be a great one to chuse such Company, and to prefer it before that of Good and Wise Men; the proper use of Conversation being to improve our time, not only to pass it away.

But further he says, many of those who are commonly called Good Company, either persuade or divert us from Good things, and it is esteemed Indiscretion to say any thing, that may enrich our Understandings, or awaken our Consciences. Yet it ought not to be the business of Conversation to promote Idleness and Vice; for if 'twere well employed, it might be made an Instrument of Piety and Knowledge and be as useful as pleasant. But before this can be, the Method must be quite altered, Virtue and Seriousness being commonly derided,

and any thing contrary to Piety or Reason, in jest or railery is applauded; and in civiler Sorts of Company the Passages are scarce worth remembering, any thing grave being looked upon as Indiscretion; so that in the innocentest sort of Company we only lose our time. And indeed when I think of idle Company, it puts me in mind of *Hermits*, who chuse a Solitary Life, that Conversation may not disturb their devout Thoughts, or discountenance the Entertainment of Good Ones. And if Civility were not a Vertue, and Hospitality in some Cases a Duty, I should take little delight in some kind of Entertainments, the Ceremonies and insignificant Conversation being like Parents playing with their Children; and though it may be justifiable to do so, to still a Child, or keep him from harm; so the Duty of Civility justifies such Conversation, though the Expressions considered seem much below a Man, who is fitted with the use of his Reason, or those whom Religion hath given the hopes of Heaven.

But further, says Mr. *Boyle*, though we ought to keep good Company, to acquire Vertue or Knowledg, Christianity teaches us, that we were not Born for our selves, and therefore we ought to converse with others, that they may learn and see, how much the Goodness of God hath made them different from other Men, and though our Conversation does not presently reform such, yet it may not be altogether ineffectual; for the Seeds of Vertue may a long while lye Dead, yet at last may Flourish and Fructify; so that your Conversation may have a good though not a conspicuous Effect.

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As a Man may be hindered from making so much haste to Hell. So old People may be relieved by Cordials, though not perfectly cured. In this Mr. Boyle was so good a Christian, that his Advice is according to our Saviours Example, who kept Company with Publicans and Sinners, and though he was called a Wine Bibber, and a Friend of Publicans and Sinners, yet he valued not those Reproaches, whilst he was doing the Work of his Father that sent him, and converted sinners by his good Example and Conversation.

But to proceed, to what Mr. Boyle says further on this occasion, It may not be a little serviceable for a Man of Piety and Parts, to speak of Religion amongst those that deride it, and to make their Conscience a Witness of God and good Things; to let them see, the Beauty of a pious and good Life, and to let them know, he despises those Vanities they doat on, living contentedly without their sinful Jollities; and to let them know, that amongst bad Men, a virtuous Life is neither impracticable, nor a Melancholly one. Our Saviour by conversing with Publicans and Sinners, gained the Hearts and reformed the Lives of those he conversed with; and though Men of Vertue and settled Parts, may make a good use of bad Company, yet for others to be often in such Company, is not only an Infelicity but a Fault. For generally speaking, there are three sorts of Company; One which can neither improve, nor will be improved themselves; Others both able to learn and to instruct; And others though unable to instruct, are willing to learn. I shall therefore

wherefore most chearfully seek such Company, as may impart to me Vertue and Knowledg; nor shall I refuse the Company of those who are forward to learn, and stand in need of it; but those who can neither teach me good, nor are willing to learn, though their Company may court the Eyes, and though I may accidentally happen into their Company, yet I shall not willingly chuse it.

But as good Company may have a good Effect amongst bad, so Mr. *Boyle* elsewhere represents the danger of bad Company; says he, when a good Man first falls into prophane or vitious Company, his Zeal instead of being overpowred by such Opposition, is excited, being more likely to warm the Devotion of others, than loose any himself; but when he is frequently furrounded with such Company, he will too often both loose his own Fervency, as well as the Power of communicating it, and will at the last live quietly with them, and shew as little Religion as they, that which at the first exasperated them becoming familiar, and not at all moving them.

To prevent further the ill consequences of bad Company, he tells us, that we often think of Atheistical Suggestions and Lustful Fancies, without design to pursue them, or to quit Religion and Chastity, thinking to fortify our selves against them, by discerning their formidableness; and yet the Nature of Atheism and Lust are so pernicious, that they turn our Brains, and without the Interposition of Providence & Christian Prudence, we might fall into them, and be devoured by the greatness of the Danger we were considering. It is dangerous to

parley

parley with such Enemies, though we design to strengthen our Aversion, and is as dangerous, though not so fatal, as to hold Intelligence with our Enemies. Indeed the Deformity of these sins is such, that it cannot at once be discerned, but the Discovery is more dangerous than necessary; a small Knowledge of them being sufficient to make us abhor them. And since those Deformities which are less obvious, are dangerous to be pryed into, we ought to be cautious, how we learn more of them than is necessary to make us hate them, since those that are frightned with the recent Marks of the small Pox, may catch the Disease with that sight.

Thus much being said to give a brief though faint Idea of Mr. Boyle's Notion of the Effects of Company, we shall in the next place represent, what he says of Conversation, which he lays down by way of Reflection, on a Friend discoursing with an Eccho, says he, one of the Company diverting himself with an Eccho, another told him, that he should not like such Company as talked indifferently with any Body, that would talk to her, and make noise enough; for those who are so easy in admitting all kind of Company, provided Men have boldness enough to intrude themselves, are exposed to one of the greatest hardships, which does more Mischief than most Men are aware of; for it does not only keep Fools in Countenance, but encourages them to be troublesome to Wise Men. Some sort of Praters fill their Discourse with Noise instead of Sense, and because Men give ear to their Impertinences, they think them none;

*His
Thoughts of
Conversations.*

none; and Confidence and Wit are so hard to be distinguished by some, that they will easily answer any Body that will talk loud enough. Which hazard of Patience and loss of Time, encourages others to multiply idle Words; so that by Custom, Civility is made a Duty, and Vertue accessary to a Fault. And though such Talkative People are worse Grievances, and rob us of our Time, than those which Judges condemn for petty Thefts, a little Money being less valuable than that Time which it cannot purchase; yet those Lords and Ladies who thus spend it, deserve it; for if their Minds were suitable to their Qualities, they might easily banish such Conversation, and live at quiet, advancing the Reputation of their own Judgment, without injuring that of their Civility; for when this fault is committed, their Quality makes it the more conspicuous; for no doubt fewer will be found studious to express Wit and Vertue, when they see, that empty impertinent Prattle with Confidence and Loudness, obtains as good a Reception as Rational Discourse. And indeed, that tyrannous thing called Civility, hath been so prejudicial to Reason and Piety in Conversation, that if never so many be engaged in Instructive Discourse, the addition of one that is impertinent, and below their Discourse, shall debase the whole, and level it to their own; as if the Exercise and Benefit of Wit and Vertue were to be laid aside, for the foolish Conversation of one, not able to discourse with them. Thus they seem to be ashamed of their Conversation, instead of improving him, to make him fit for their

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their Company ; which if they should endeavour to do, they would either be freed of such Companions, or make them worthy of their Company.

But to proceed, another Objection Mr. Boyle makes against the Conversation of an Eccho is, that we make her to speak what we will, just as we please. Indeed moderate Complaisance is necessary to preserve the peace and pleasantness of Human Society ; and Discretion allows it in several Cases, for if Men always spoke their Minds freely, and did not mutually conceal their dislike and dissents, and by external expressions of Kindness and Respect, represented by Compliments and Gestures ; Men have so many Imperfections, and so much Self-Love, that they would scarce endure one another. Nay though Men are Naturally inclined to indulge themselves, yet there is scarce a Man of a Thousand that would endure himself, if we did not flatter our selves, and exercise a Complaisance within our own Breasts, and thus disguise our selves to our selves as well as to others.

But he proceeds, perhaps I may endure, but shall never chuse, a Companion, whom I must always direct how to answer me. And I should like one better that would always dissent from me, than one that never would ; for I should never esteem him my Friend, or think him not worthy to be so, who rather chuses to please me than to advantage me, and takes not the Liberty of a Friend, by shewing, that he regards me as well as himself ; for as Unity of Affections is a Token of true Friendship, so there can

can be no good Company, where there is not sometimes a dissent in Opinions.

But as every thing may be represented with advantage as well as disadvantage, Mr. Boyle not only made Reflections on this Subject, to represent the disadvantages of conversing with such Company, but offers what favourable Thoughts we may have of the same, in defence of the harmless Nymph *Eccho*; for says he, she is so modest and reserved, that she never begins a Conference with you, and is so complaisant, that you must blame your self, if she says any thing to displease; and as Human Things are none of them so perfect, but that something in them ought to be shunned; so there are not many so imperfect, but that something in them may be worthy Imitation; and as *Eccho* hath two Qualities that discommend her, so she hath as many to recommend her. The first is, that this Nymph is less talkative than most of her Sex, or even of ours; for she never speaks except spoke to. If we consider, how much Talkativeness wastes Time, and is made up of such Discourse, as either flatters the Present, or detracts from the Absent, or censures our Superiors; or otherwise, expresses our own Prophaneness, or excites Pride and Lust in others; and if we further consider, that in much Words we are apt to offend, and must give an Account of these *idle Words*, a Man being to be justified by his Words as well as Actions, we shall easily believe, that silence would be much more serviceable to Mankind, and that Hell would be much thinner than it is. Besides Silence is commendable, as it conceals Ignorance

ignorance and discovers Wisdom, it being a Property belonging to Wise Men so much, that a Fool may pass for one when he says nothing; and this may be said for our Nymph, that she never speaks, but when an Answer is extorted from her. Another good Quality in *Eccho* is, that she seldom repeats above a small part of what is said, which in dangerous Times is a great piece of Discretion; for some, as if fit for Universal States-men, concern themselves in almost all the Publick Quarrels in Christendom; being zealous for a Party, that hath no benefit by their disputes, and are not like Merchants, who may suffer by their Passions in the remoter Parts of the World. In our own fatal Differences, they will declare their Opinions, when there is no occasion for it, for want of Judgment; and perhaps ruin themselves as well as those that protect them, by spreading Reports and maintaining Discourses, which make them suspected amongst those, who would otherwise think their forces better. Nay some in considerable Employments, would talk so much of their Party, their Innocence not deserving it, their Goodness would not support it; these Men dealing with their Fortunes as Children do with their Cards, who build Castles and blow them down with their own Breath. It is less Folly to believe, what one hears, than to report all one believes, and especially those that are censured for want of reservedness; for though some Men's talking, makes others take notice, how much their own Party confides in them, yet it would argue more discretion to consider, that the proof they gave

ill Exam-
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gave of their being trusted with Secrets, argues that they ought not to be so.

Thus much being said, to shew how far ill Company or ill Conversation, may be prejudicial, we shall next proceed to represent, what Mr. Boyle says further of Bad Examples, and what Encouragement he proposes to enable us to resist them, says he, It is a great Vertue to conquer those Difficulties, which occur in resisting the Temptations of Evil Customs and Examples; and though the Scandal given by bad Examples, is so obvious a Temptation; yet it is one of the most Dangerous, for Interest, Bashfulness, and Complaisance, in well bred or good Natured Persons, makes them rather comply with the Sentiments and Practices of the Persons they live with, than offend or disoblige them, and many have been debauched with the Company and Examples of the Vicious, whose Frowns or Threats could not affect. But these Temptations are guarded by the Precepts and Precedents of Religion. *Thou shalt not follow a Multitude to do Evil*, was the Command of the Mosaic Law. *Say not thou a Confederacy to all to whom the People shall say a Confederacy*, was the Command of God to his Prophets, & our Saviour to prevent an anxious Solitude amongst his Disciples, uses this Argument, that *after all these things the Gentiles seek*. And in the same Sermon on the Mount, he perswades them against vain Repetition in Prayer. And the Heroick Conqueror of Canaan unwilling to contradict a Multitude, told the Victorious Jewish Nation, they might Worship whom they thought fit, either the Gods of their Fathers, or those of the Neighbouring Nations.

Nations, but *as for me and my House we will serve the Lord.* Be ye not conformed to the World, says St. Paul, and the Apostle John, 1 John 5. 9. passionately tells the Christians of his time, *We know that we are of God, and the whole World lies in Wickedness.*

The Honourable Mr. Boyle having thus shewn us, how we ought to resist the ill Effects of bad Examples, we shall next proceed to take a short view of what he hath said to promote the ill Effects of Vice, by resisting Temptations; says he, we ought to think, how the World's Treacherous Pleasures are apt to deceive us. For as the Apostles were Fishers of Men in a Good Sence, so the Devil is a skilful Fisher of Men in a Bad Sence, and finds as much success in his Attempts on us foolish Mortals; and as sadly deludes us, when he uses his best Baits; for the best things he can offer, are of small value in respect of what it must cost us to enjoy them. But though Riches, Power, &c. which delight the Senses, are Good in their kind, tho' they are not of the best kind, yet many are so easily deceived, that he needs not make use of his best baits to catch us, since we suffer him to cheat us with empty Titles of Honour, the Smiles of great ones, and the Uneasy Drudgeries disguised with the empty Names of great Employments. And these when obtained by Sin, are the Reward of it, and the Devils Counterfeit Baits, which we greedily swallow; not discerning what Vice shews no more than what it hides. We ought therefore to be cautious of such Baits as may grossly deceive us; for whoever is tempted with the delicious
 in sweets

His Admonitions to resist Temptations.

sweets of sin, which the Enjoyment promises, swallows a true hook for a Counterfeit Bait, which hides that under it, which makes it not need to be a Counterfeit to deceive him.

And to guard us, and give us a Caution to be wary, how we fall into Sin, he elsewhere tells us, that it is not safe to travel on the Confines of what is Lawful and Sinful, no more than on the Borders of two Hostile Countries; for when we venture too near the Confines of Sin, and to the utmost Verge of what is Lawful, our Natural Proclivity to evil is apt to carry us into sin, as our weight carries our Bodies downwards; since we may meet with hollow ground where we may expect to find it firm. He that goes too near sin to day may fall into it to morrow; so that the wise Man forbidding his Son to go into the Paths of the Wicked, and the way of Evil Men, bids him avoid it, pass not by it, turn from it, and pass away. God hath been so indulgent as to give us a Latitude and Liberty to exercise a pious Zeal over our selves, that we may shew how much we fear to offend him, and a cautious Christian will say with St Paul, *All things are Lawful, but all things are not expedient*. And Prudence will not always venture to the brink of Innocence.

To these we shall add another Caution, Mr. Boyle makes use of to resist Temptations; says he, in another place, though I take a great deal of delight in Astronomy; yet I can look upon the Ornaments of Heaven, with a Mind as Serene as the Night fit to observe them in. Thus those who are of an Amorous Disposition of Mind, and delight to gaze upon a Constellation

of fine Ladies, their Hearts commonly pay for the Pleasure, and they met with so many disappointments that they rather languish than live, whereas one that hath his Reason and Affections at command, can look upon such Objects with pleased, yet not dazled, Eyes. He looks upon such Curious Productions and admires them for the Workmanship; adoring the Divine Artificer; and what hath been said on these are applicable to all other Objects.

And as Mr. Boyle thus admonishes us to resist Temptations; so he takes Care to forewarn us to avoid the pursuit of those Things that are apt to lead us into Temptations, and as being employed in doing Good, keeps us from being engaged in Evil; so he tells us the ill Consequences of Idleness, and advises us to employ our time in such things, as instead of exposing us to Inconveniencies may improve our time to our Advantage. And *First*, to represent the Danger of Idleness, he tells us, that to keep the Soul from Idleness or other Exercises worse than Idleness; we ought to employ our selves in such sort of Meditations, which are innocent at least, if not Good; by which means, our Ghostly Enemy hath less Encouragement to attack us; for the Evil and Danger of Idleness though in it self it be no sin, yet it may be more mischievous than a great one, as it gives occasion for the Tempter to tempt us, exposing the Soul like a place uninhabited, to the next Passion or Temptation, that hath the Opportunity to seize upon it, which represents it so formidable an Enemy, that that

The Danger of Idleness.

is a sufficient Motive to recommend innocent Meditations, or such as are advantageous, *That it banishes Idleness.* He that is versed in making Reflections on the Works of Nature, and the Actions of Men, and sets his Thoughts at Work, on what Casualties fall under his Notice will not want Subjects to employ them on; and he that can make the World Vocal, and every Occurrence conversant with himself, and every Accident of Life, and even the Flowers of his Garden speak Lectures of Ethicks and Divinity, needs not frequent Taverns, or worse Places to pass his time away with a Drawer or a Gamester; nay, he will rather pity than covet the Company of those, who neglect the main business of Life, and spend it wholly in Diversions, and led by ill governed and unskilful self Love hate to be by themselves. He that frequents the Company of Gamesters, loses what his Winnings can never purchase nor redeem, exposing himself to more Casualties than those of War, giving way to those Passions which Wisdom would decline, and Virtue suppress, such patiently losing their time, and that Reverence and Submission, *they own to him that of Lots themselves the whole Disposal is his.* He will have no occasion for want of Employment, to throw away his time in impertinent Visits, or idle Company, to the loss of his Good Name, his Innocence and true Zeal.

And as Mr. Boyle directs us, how to keep ourselves from Idleness, so says he, it is the best way to keep out evil Thoughts, to employ the Soul with good Ones, as Husband-Men, to

a piece of Ground of Weeds, sow it with Good Seeds, and cut down them or burn them up. And since some Peoples thoughts are so active, that they will be perpetually employed about some thing or another; Meditations will stir up some Good Thoughts and stir up Affections full of Serenity and Joy; and when a Mind is once elevated to such a welcome state, a Man cannot give way to an ordinary Temptation, without forfeiting his Pleasures as well as violating his Duty. But if the Employment of occasional Meditations will not be so delightful, it will give a Man the satisfaction of saying with *Neh. 6. 3. I am doing a good Work, so that I cannot come down, why should the Work cease, whilst I leave it and come down?* For when a pious Soul is upon the Wing of Contemplation, she must stoop to exchange her Conversation with Heavenly Objects, for one with earthly Vanities, which much more debase, and degrade her, if tempted to Lusts as low as Hell, which they both belong to, and deserve. And further he says, there is this difference betwixt Ghostly and Ordinary Dangers, that as in Military Hazards, they are boldest to run themselves into Military Dangers, who are best able to surmount them, so on the other hand, they are most cautious of Temptations, who are most resolved, and qualified to resist them.

But to proceed, as Idleness is so pernicious, and of ill consequence, so Mr. Boyle, not only shewed us an Example, even beyond Example, to the contrary, but to encourage us to do the same: He tells us, that God holds forth Eternal Glory, and his Gracious Word encour-

ges us to attempt it; *Alas!* says he, it is above the reach of our Endeavours or Merit; yet if we strive not for it, it is in vain for us to expect it; but if we use our utmost Endeavours, God Mercifully accepts the Will for the Effect, and what we can do, for what we should do, his Grace condescending to bring down, what we cannot aspire to. Piety is the Terms but not the Price of Heaven, and like the Wedding Garment, though it gives us not a right to the beatick Feast, yet without it no Guest shall be admitted. And though Good Works will not reach Heaven; we cannot attain it without them.

But to represent further the Danger of Idleness, and how idly some Persons employ their time, says he, there are a great many that hate thinking or to be alone, their sinful Pastimes making them afraid of it, as well as preventing it. In Health, Visits, Cards and other Pastimes succeed so thick, that the distracted Person hath no time to converse with his own Thoughts; and in Sicknes, Cards and Company prevent the Opportunities of thinking, which he willingly declines; so that sickness is far from helping them to think, unless it hinders them from Sleeping. But when all the Company is withdrawn, then in the dark Night he begins to think of his Condition, and for want of outward Objects begins to look inward, and must needs think of what Avocations in a Day would not admit.

Having thus represented, how much like a Christian Mr. Boyle both by good Examples and Precepts endeavoured to promote Piety; and

having

having further shewn, how zealous he hath been to prevent those neglects or errors, which might obstruct the growth and increase of Piety and Religion, and give way to Immorality and Irreligion; we shall in the next place consider, how he not only endeavoured to prevent vitious Habits, which might lay us open to Sin, but briefly take a view of what he hath offered against the Practice of those Sins, he had so much aversion to.

The first then which we shall take Notice of, and which he had an absolute abhorrence of, is the Sin of Hypocrisy. Says the Learned Bishop Burnet, "He had too unblemished a Candour to be capable of those Arts and Practises, that a false and deceitful World may call Wisdom. He could neither Lye nor Equivocate, but he could well be Silent, and by practising that much, he covered himself upon many uneasy Occasions. And as he was free from the Sin of Hypocrisy before Men; so he was as averse to it before God; says he, the Lark seems to be of the most elevated Nature of any Bird, giving the earliest and sweetest welcome to the springing Day; and observing one which rose higher than the rest, upon it's descent, says he, it seemed to sing as if it came from the place she seemed to go too, and mounted so high as if she meant to stop at that Sun, whose Beams cherished and transported her; and soared so high, that if she left not the Earth beneath her sight, she mounted quite out of ours; and when she lighted on the Earth to catch some Worms or other wretched Prey, she seemed, like the Earth about her, and could not be discerned

His aversion to Hypocrisy.

from it's Clods. And as other Birds fly not so high, nor are so fond of the Sun, yet build their Nests in Trees, the Lark builds hers upon the Ground, and looks like part of it. Thus many a Hypocrite, when conversant about sublimer Subjects, looks like a Saint, and is pleased with nothing more than new Light, as if his Lips was touched with Coals from the Altar, which freely set forth God's Praise and sacred Dispensations. So that in a fit of Devotion, one would either think he had been in Heaven, or would not rest till he had mounted thither. But when his Interest concerned him in secular Affairs, he seemed altogether Earthly, and meaner and lower Spirited, than those he undervalued, for being more Earthly than himself, so the best things corrupted prove the worst, it being no disadvantage to Piety, to discountenance Hypocrisy as a Vice. And when pretended Religion is in request, several are formally Religious, who deny the Power of it, and some have been preferred less for their *Jacob's* Voice, than for their *Esau's* Hands.

But we are not to run out of one Extreme into the other, and to deny Religion, because Hypocrites do but profess it. It is ignoble and Preposterous, says he, to make Piety a step to Preferment rather than to Heaven; but it is more excusable to live free from Scandal for an Inferior End, than not to live so at all; Hypocrites being no more able to justify themselves than the Prophane; and though all that own Religion are not Pious, yet those that scorn to own it must be less so; and if Scoffers

at Religion should succeed Pretenders to it, they cannot be said to be an innocent sort of Hypocrites, who are better than they seem to be; for Scandal is so Criminal, that those that desire to seem so, are so; and to refuse to be Religious because some seem to be so, is to be injurious to God, because others have been so, and as Counterfeits do not lessen the value of true Pearls, so they are not less Cordial, because the Counterfit made of Mercury and Glass at *Venice*, are rather Hurtful than Medicinal. And indeed, Hypocrites should rather commend Piety, than discourage it, since none would endeavour to personate it, if it were not a Noble Quality. Therefore the best way to shun Hypocrisy, is to become Professors of what we pretend to.

And as Mr. *Boyle* thus shews his dislike of so great a Sin as Hypocrisy, so he was as unwilling any should be innocently condemned of it, as that they should be guilty of the Practice. We need not doubt, says he, but that those that personate sadness, are Courtiers; for tho' their Cloaths are mournful, their Faces do not appear so, their Discourse being as unconcerned, as when they wore other Cloaths; and as their Grief hath neither influence on their Looks nor Words, it seems strange that Courtiers cannot disguise or dissemble Sorrow without an over difficult Constraint. But as Men may seem to mourn without doing so, so they may be thought to dissemble, when they do not. But what Duty can there be to mourn for a Prince, whose Subjects we are not, from whom we have received no Obligations, and who

who laid it out of the Power of his Successor to do good, because himself did none. And if we should ask, why we should put on Black, it may be answered, that Custom hath established that Ceremony in the Courts of Princes in Amity, and that the Omission is an Affront and a Provocation; therefore Black is out of respect to the Living, not grief for the Dead, and therefore this mourning is not Hypocrisy, but Prudence and Civility.

His Aversion to Avarice and Injustice.

Nor was the Honourable Mr. Boyle less averse to Avarice and Injustice. His great Charity and Liberality evinced his Indisposition to the former, and his just dealing his Dislike of the later. But to shew his Thoughts of these Sins further, we shall represent what he said on such Occasions, says he, a Fish having greedily swallowed a Bait, thought to go away with it, but being struck and wounded as well as detained, after a short struggle broke the Line, and carried away the Hook. And if we are not too forwards in allowing Brutes to think, no doubt but this Fish expected a great deal of Pleasure in the Bait he so greedily fell upon, which when he had got in his Mouth, he might well think his own; and no doubt but other Fish when they saw him swim away with it, envied his good Fortune. But though he got what he wished for, yet since he got the Hook as well as the Bait, which wounded his Gills and put him to Pain; no doubt but he wished the Hook, Bait and all out of his Jaws, the Pain of the one taking away the Pleasure of the other. Thus Men who make use of undue Measures, to obtain an Object of sensual Pleasures, are of-

ten disappointed in their Expectations ; Conscience, Reason or Honour, when perhaps their Desires are not of the worse kind, making them do as *David* did, too earnestly longing for Water out of the Well of *Bethlehem*, which being got by the bold and enterprising Attempts of his Affectionate Officers, he did not taste it, but poured it upon the Ground. But when things are Criminally obtained, sometimes it happens as it did with *Ammon*, who hated his Sister he had incestuously ravished more than he loved her before; and sometimes as *Judas*, who when he betrayed his Master, of more value than all the World, for a little Money, could not enjoy it, but in a fit of remorse parted with that Money, which the Price of his Conscience purchased ; so that though he had what he looked for, he had not what he expected, nor could enjoy it, for the guilt of acquiring it. And in less Criminal Cases, when Men have got their Aims, their wounded Conscience is so painful, that they detest what they have gained.

To represent further his Thoughts of Avarice, and Injustice, we shall take Notice of what he hath said elsewhere, upon a Waterman's drawing a Boat ashore. Says he, when we came to the Landing-place, the Waterman took hold of the Shoar with his Boat-hook, and hauled her ashore, which otherwise would have been carried away with the Stream ; on which he made this Reflection : That it is as ordinary for Men to think themselves Wise, as it is impossible for them to be so. Those that study and leave nothing undone, to obtain their ends,

ends, often lay their Designs with so much Art; that whatever becomes of the Designs of God, his Promises or Threats, they doubt not of the Success of their own. And Pious Men, who have the Opportunity of Discovering the Measures they take to bring about their Ends, are often possessed with needless Fears, that Providence will be puzzled with them, and that for good and just Reasons, Providence may be forced to an After-game in the World to come; But such Designers have the like Fate with our Water-man; for one that did not know the the World was fixed, would think, that this Water-man endeavoured to pull to him, whatever he forceably laid hold on; but the Shoar being unmoveable instead of drawing that to him, his Force drew himself, and his Boat to that; so the Contrivers of *Babel*, thought by their building to get a Name and prevent Dispersion; and had not only engaged Mankind in their Design, which was as high as their intended Building, since it is said, *that this they begun to do, and now nothing will be restrained from them, which they have not imagined.* But their Policy being contrary to God's Decree, he made that which brought them together the Cause of their Separation, so that the remotest Parts of the Earth are but Colonies of *Babel*, and tho' it's distressed Architects have got them a Name, yet it is different from their Design. And thus *Joseph's* Dreams of Superiority over his Brethren, occasioned them to sell him to prevent it, yet that Method brought him to be Interpreter to *Pharaoh's* Dreams, which promoted him to be Lord of a Rich and Plentiful Country, and

and by that means of his Envious Brethren. And the proud Favorite of *Ahasuerus* doubted not of his Ends, when he provided *Mordecai's* Gibbet, which if he had not erected it, he might probably have escaped. And the high Priest and *Sanhedria* of the *Jews* thought they had acted Politickly, when he resolved upon the Death of our Saviour, lest the *Romans* should come and destroy their Temple and Nation, which it rather procured than prevented. And the Devil himself, who was the Wisest Instructor of the rest, found himself taken in his own Craftiness; for though by making *Pilate* and *Herod* Friends, he thought to destroy the Lamb of God, and to engage them to kill the Prince of Life, and by that means to destroy the Devil's Enemy, and to make God's theirs; yet Christ by his Death destroyed the Devil, who had the Empire of Death, and the Wound in our Saviour's Side was deadly to him; so that the Decrees of Providence cannot be moved by Human Attempts. God's Power and Wisdom over-ruling their utmost Endeavours, and using their own Policies, to defeat what they aim at.

And as Mr. Boyle was not only Eminent for his Vertues, but demonstrated his Aversion to Vices; so he was careful in advising us to render our selves less Subject to them, by Governing our Passions and Mortifying our Appetites; for says he, the Devil might in vain attempt our grand Resolutions, till the less considerable ones are overcome and made Instruments to destroy the other, our more trivial Affections, having once received his fiery Impressions, easily

*His Advice
to moderate
our Passions.*

easily communicate them to the higher Faculties, and kindle those more solid Materials. The best way then is to be watchful over our lesser Determinations and Passions, and neither to violate or neglect those less considerable ones, considering the Consequences, that may attend them, and that such slight things may tend to endanger or preserve.

But though he would have us to moderate our Passions, yet he tells us, it cannot be expected, that we should be wholly without them; for observing not only the Windings of a River, but the Fertility of the Land near it, and the other uses which it was serviceable in, in conveying Ships of Traffick; he makes this Reflection. Says he, this River furnishes us with an Argument against the Stoicks, who would have us deal with our Passions, as *Pharoah* did with the Jewish Males, lest they should one day rise up against us. But though these Passions are Rebellious, yet it would be as unreasonable to be without them, as without Rivers; because when they overflow they do a great deal of Mischief. *The Immaculate Lamb* looked round about him upon certain Jews, with Indignation, being grieved for the hardness of their Hearts, where two Passions are assigned to him; and if we consider what Use the Wise may make of their Passions, we ought not to destroy those Instruments of Piety, which God hath bestowed upon us, since we ought to retain them, as *Abraham* did those Servants he bought with Money, whom he both Circumcised and kept as Servants.

But as Rivers drown those Grounds, and ruin Husbandmen when they overflow, which they made fruitful, whilst they kept within bounds; so Passions destroy those Vertues, which they might if within due bounds be serviceable to. Valour is said to be Anger's Whetstone, and the Apostle counselling us to be angry and not to Sin, argues Passion within Limits of Moderation, to be consistent with Innocence. But when Anger is blown up into Rage, or Choler turns to habitual Fury, it does more Mischief than Beasts or Inundations. The greatest Part of those Rivers of Blood, which are lost in Battles, stir up the Thirst of insatiate Fury. The burning Towns and Fleets, and the Desolations of Kingdoms, are the Effects of Inhuman Passions, when once it invades Crowned Heads. And even Love, when once it grows unruly and misplaced, produces a great many Tragedies; and innocent Love, if not regulated, is apt to grow disobedient, deceive Parents, violate Friendship, fight Duels, betray the Innocency of Virgins, and a great many more Accidents, which make Thousands miserable. And as Ambition when it respects Vertue and Goodness, makes Men undertake Noble Things; so when it pretends to Superiority in Fame and Power, how many Vices does it run Men into! as the Contempt of the Laws, the Violation of Oaths, the Renouncing of Allegiance, &c. and when harboured in a Princes Breast, it tends to the undoing of his own Subjects, and a great many Inconveniences that result from his Disputes with Neighbouring States. *From whence came Wars and*

Brady.

Brawlings amongst you, come they not from hence even of your Lusts that war in your Members. Anger and Ambition bringing upon Men publick Calamities, either as Judgments inflicted by God, or as Evils flowing from those mischievous Practices, which unbridled Passions inflame Men in. So that as the usefulness of Rivers hinders them not from being secured by Banks to prevent Inundations; so neither does the Usefulness of Passions, hinder us from restraining our Passions within due Bounds by Reason and Religion, which when they overflow, they are like Fire and Water, which are not so good Masters as they are good Servants.

And since the Passions of the Mind are to be moderated and regulated, to encourage us to undertake a Difficulty, which is apt to foil our best Endeavours, he tells us in another place, that when the Faculties of the Mind are discomposed, whoever attempts to bring them into order, mu't meet with Opposition, & expect the beginning of a Reformation, more troublesom than the past disorders; but these difficulties ought not to discourage our Endeavours; for when once the Faculties and Affections of the Soul, are tuned with Reason and Religion, the composed Mind will afford a satisfaction, which will recompence the Trouble of procuring it; not to mention that more ravishing Melody amongst the Saints, that sing the Song of the Lamb, and the Hallelujahs of the Celestial Choir.

And as Lust is not only a Rebellious Passion, and as dangerous; to arm us with Cautions against it, he tells us, the Lustfull think, that

they

they can but stifle it's visible Effects, and sensible Heats, that will secure them from all the Mischief they need to fear. But Lust is so apt to intrude wherever it hath been entertained, that it may be Mischievous to those that have repelled it; for as Wood being thoroughly fired and then extinguished by choaking it up, may be turned into Charcoal, which is more easily kindled and enflamed than before, so those who have had their Hearts once kindled with the Flames of Lust, which is to be set on fire with the Flames of Hell, when those Carnal Flames are stifled, and their Heat is extinguished, their Reputation may be stained by what is past, and they still retain an unhappy Disposition, to be reinflamed, and by a few sparkles fomented, are apt to have those fires kindled again, and rage more fatally than ever.

And as our Passions being not duly regulated on the one hand, it may be dangerous one way; so they may be exorbitant on the contrary, and produce that ill Effect Despair, upon which occasion Mr. Boyle hath offered something, which may be worthy our Notice, and afford comfort to those possessed with it; for, says he, though for Reasons best known to God, a pious Soul may be reduced to so bad a Condition, the Face of Heaven appearing so overcast, that Tokens of God's displeasure may follow as close as Clouds return after Rain. Yet if notwithstanding the Soul seems to be deserted, it brings forth Fruit, like the Good Ground in the Gospel, with perseverance; and if Prayers, Charity, Relinquation, and other Divine Graces,

ces, genuin Products of God's Spirit, flourish and prosper in the Soul, we may conclude that Soul to be in a State of Grace, and shall have that blessed Assistance from him, who can give the Increase, though not so conspicuously as in an unclouded Heaven; yet in the secret Method of fructifying Influences. And it may reasonably be expected, that he who hath begun a good Work, and carryed it thro' such Impediments, will gradually bring the slowly ripening Fruit to Perfection. For Christian Graces so much depend on the Author, that tho' he be hid in the Clouds, we need not fear the Fruit we see, to be the Productions of the Son of Righteousness. We must not conclude it Winter with the Soul, because the Heaven lower, if the Earth be Fruitful; since the living Influence of God's Spirit may be where his Presence is not conspicuous. Sensible Comforts and Joys are rather Rewards, than Parts of our Duty, and it would be a great Consolation to pious Persons, if they would judge of their Spiritual Conditions, by the Duties and Services they pay to God, rather than the Comforts he at present affords them.

*Some hints
of his Opin-
ion of A-
theism and
Prophane-
ness.*

Any one that hath only considered, what he hath hitherto been said, so shew briefly how Good as well as how Learned a Christian Mr. Boyle was, and how much he was Exemplary in the Practice of Vertues, as well as his Aversion to Vice, will easily conclude, that he was no less averse to Atheism and Profaneness. From what hath been said of his Faith of the Existence of a God and a Providence, it appears that he was far from being of the number

tho'

those that deny them, yet as we enumerated those amongst the rest of his Vertues, we shall here shew briefly, among those Vices which he disclaimed. how reasonably he opposed the Growth or Increase of Atheism and Prophaneness. And since the Vitious Habits he endeavoured to reclaim, reciprocally encourage and tend to Atheism and Prophaneness, as Atheism and Prophaneness encourage those Vices, to prove the Principles of Atheism without Foundation and Groundless, speaking of the Shadow of a Man, he says, it had the like Relation to himself, as the Universe hath to God, it representing and containing the Impressions of his Attributes, and Perfections: And as the shadow only represents the shape and outlines of a Body; so in respect of that, it is but a superficial thing; and thus though the World contains the Linements of Divine Wisdom and Power, yet it is but a dark imperfect and Superficial Representation of the Excellency of our Adorable Author, who is infinitely above all his Works — and as the shadow of a Man is made without taking pains for it, with as little difficulty God made the World. *He spoke, and it was done, He commanded and it stood fast. Psal. 33. 9. and Isaiab. 40. 28. the Everlasting God, the Lord, the Creator of the ends of the Earth, fainteth not, neither is weary, and therefore his resting the Seventh Day, was a cessation from Creating, but not as a resting from Labour; for the Disproportions betwixt Infinite and Created Agents are so inconsiderable, that Omnipotence may make the World without Toyl — and further, our Creed declares*

him Creator of Heaven and Earth, and the Apostle tells us, *Heb. 11. 8.* that through Faith we understand, that the Worlds were framed by the Word of God; so that the things which are seen, are not made of things that do appear. He brought forth Light out of Darkness, by calling for Light and there was Light, he spake and it was done, says the Psalmist, so that the World was but an Eccho to that *Fiat*. Thus far Mr. Boyle.

And as the Shadow of a Man was lost by withdrawing himself under the shadow of another Body; so the Preservation of the World depends on the Will and Pleasure of it's Author, says Mr. Boyle; for in him we not only live and move, and have our Being, and *Nehemiah 9. 6.* he says of God, that he hath made the Heaven, the Heaven of Heavens with all her Host, the Earth and all things that are thereon, the Sea and all things that are therein, and preserves them all; so that without God's Influence the World would soon fall into nothing. And further, he says, so the Notions of Genus and Species exist no longer than they are upheld by being thought of by an Intellectual Being, and the Psalmist speaking of many of God's Creatures says, *Thou hidest thy Face they are troubled, thou takest away their Breath, they dye, and return to their dust, thou sendest forth thy Spirit, they are Created, &c.* And as by moving any Part of the Body, the shadow may be altered without any Instrument or Emissary, so when God hath a mind to Work Miracles, as when the Sun stood still in *Joshua's* time, or when it went back in *Hezekiah's*, we are apt to think, that he is forced to put himself to a great deal

deal of trouble to exert his Power; whereas those things are so far from being difficult to that Divine Agent, that it is as easy for him as to resolve to do so; such Miraculous Effects flowing from the Motion of his Will, it being no more trouble to produce the greatest than the least Effects amongst his Creatures, as it is no harder to move the Arm, than the Finger of any shadow.

And as Mr. Boyle hath offered sufficient Reasons to prove the Existence of a God and a Providence, some of which we have observed in the beginning of the Essay of his Life; so to deter Prophane Persons from their vain and conceited Opinions, he says, when Good Christians shall have a larger Prospect than our Saviour had, when at once he viewed all the Kingdoms of the World, *Luk. 4. 5.* and shall behold a more Numerous Assembly than came to the Dedication of *Nebuchadnezzar's* Golden Image, *viz. People of all Nations and Languages, Dan. 3.* and when by the Voice and Trumpet of the Arch-Angel, the Fallen Angels and all the Off-springs of *Adam* shall be called to Judgment on that Decretory Day, and when the dead shall be raised, and the Book shall be opened, the Wisdom of God will appear in it's full Splendor and Meridian Lustre. When it will appear, that Divine Providence hath observed, both the Faults of private Persons, Families and Societies, as well as the Fates of Kingdoms and of Empires, which he hath over-ruled with his incomparable Wisdom. Then those Politicians, who thought to outwit Providence, will find their Subtleties outdone, and themselves taken

in their own Craftiness, and their Councils turned into foolishness, and then the amazed World will find themselves mistaken. — It is accounted a great piece of skill to keep in order, a complicated Clock, or a Man of War, and the Artist is valued and esteemed for his Conduct according to the Intricacy of the Structure. But it must be extremely astonishing to see, what Wisdom and Providence was requisite to guide and over-rule Millions of Engins, which are furnished with free Will; so as to find them subservient at the last, to purposes designed by Divine Providence, who is both Holy, Just & Good. To Conclude, when all Nations shall appear at once, and their Intreagues shall be discovered without disguise, and the Secrets of Hearts laid open, from the Beginning to the End of time, and appear to be so contrived and contrived, by the Author of the World, and of Men, that their various Actions and Designs, conspire to the accomplishment of so worthy a Design, so great an Effect will be a vast Argument of his Stupendious Wisdom; so that human Intellests must confess, that nothing but a Divine and Omnipotent Author could bring about such Ends.

And to shew, what great Advantage he hath that hath the Knowledge of a God, before an Atheist, that is without that Knowledge, Mr. Boyle elsewhere says, that they are much to blame both in respect of themselves and their Maker, who employ not their Thoughts in so Pleasant and Noble a Speculation, and Veneration for him that made them; so that Reason seems to be a much greater Blessing to other Men than to Atheists,

theists, who cannot employ it about God, but with Infidelity and Terror. So *Plato* was much more happy than *Epicurus*; the former being entertained with the Contemplation of a Deity, whereas the later had not the Felicity of such a rational and delightful Admiration.

And further, to shew how vain it is for Man, who is but small, and a Creature of Knowledg of very narrow Limits, to pretend to deny what he does not understand; says he, we may consider, that God knows a great many things which we are ignorant of, viz. most of his Works both Corporeal and Immaterial; known unto God are all his Works, from the beginning of the World, nay his infinite Power to make more than he hath or will make. And what we know but in part, he knows fully; and discerns these things clearly, which we have but a dim sight of, and hath a certain Knowledg, of what we understand by fallible Mediums. But what is the great Prerogative of our Creator, he knows himself, which is too wonderful for a Man, and out of the reach even of Angelical Intellects, an infinite Knowledg being only able to understand the Nature of God, which is Infinite. Nor is our Knowledg of his Corporeal Works to be compared to his; for the *Phænomena* which Philosophers pretend to explain, suppose the present Fabrick of the Universe, and the settled Laws of Motion; but God knows how the World was first formed, and how the Laws of Motion were first established, and transfered according to his determined Rules. And further, says he, when we consider those elaborate Specimens of God's Wisdom,

Wisdom, the Seeds and Eggs of Living Creatures, &c. the Ingenious confess, and the Confident betray their Ignorance.

And to shew, what little Reason we have to be proud of our Knowledg, and to boast ourselves so wise, as to deny God Almighty to be so or even his Being, says Mr. Boyle in another Place, the Admiration, the Contemplation of God affords to one that is attentive and humble, hath two advantages, above what can be in his Work, or any of our own. For when we admire the most noble and pretious Corporeal Bodies, as Stars, Gems, &c. our Satisfaction is allayed with a most secret Reproach, grounded on that Wonder, since it shews a great Imperfection in our Understandings, to be so much struck with Wonder about Creatures, so much inferior in Nature to our selves, whereas it is no Reflection on a finite human Intellect, to be surpris'd and amazed as well as astonish'd, contemplating so glorious and infinitely a perfect Being, which a Created Intellect cannot understand, much less comprehend. ——— And further, speaking of God, he says, since we ascribe but one Name to him, we may think him but one Object of Speculation; but though he is but one in Essence, his Immenstity is so great, that he is infinitely various; as Heaven hath but one Name, yet a great many Stars and Planets, which afford a great variety of Motions, and a great many *Phænomena*, which after the Curiosity of a great many Ages, admit of as many Improvements, as the Knowledge of the Antients amount to.

But as the Honourable Mr. Boyle, thus represents what little Reason we have to be Atheists, or rather, what Reason we have to be otherwise, so he as plainly represents, the Reasons which induce some to be Atheistical says he, it is evident from several Passages in Scripture, that Multitudes continue in a Criminal Infidelity, through a great Conceit of their own Knowledge, and a Disposition to be influenced rather by Prejudices, than the strongest Arguments to remove them.

And elsewhere he says, if we consider the different ends to which God's Works, especially such as are animated, seem designed, with respect to their own Welfare, or their Usefulness to Man, and with how much Wisdom the Creator hath made them fit for their respective Ends, we cannot think, so Wise and Benign a Being, hath left so Noble a Creature as Man, destitute of Means to procure his own Welfare, except it be his own neglect.

But to conclude, what we shall offer upon this subject, Mr. Boyle elsewhere says, That God's Divinity and Eternal Power, are so evident in the things that are made, that the Gentiles who were led to the Acknowledgment of the true God, only by the Light of Nature, were excuseless for not following that Guide. And farther, says he, Experimental Philosophy gives so clear a discovery of the Divine Excellences in the Fabrick of the Universe and its Conduct, and the Creatures it contains, as may prevent the Mind from ascribing such admirable Effects, to so incompetent and pitiful a Cause as blind Chance, or the tumultuous jostling

ftling of the Atomical Particles of senselefs Matter ; — and therefore if Philosophy be perverted to countenance Atheism, it is the fault of the Person, not the Doctrin, which is to be censured by it's Natural Tendency, and not the ill Use bad Men make of it, those prevaricating Pretenders to Philosophy, as little understanding the Mysteries of Nature, as they believe those of Christianity ; which Character belongs to most of those Atheistical and Prophane Men, whose Sensualities, Lusts and Passions, darken and seduce their Intellects. This Immorality, says he, is the Original Cause of their Infidelity, nor were they inclined to Irreligion by Philosophy, but having got some smatterings of it, pervert them to countenance those irreligious Principles which they brought with them to the study of it.

Having thus observed his aversion to Atheism, we shall next take Notice of his Aversion to Prophaneness, which most commonly Atheistical Persons are most guilty of. Says Mr. Bayle, a great many are looked upon as Wits, who disparage the Scriptures, that really are not so; nor would they be thought so, did they not employ what they have, with a great deal of Impudence, in perverting inspired Expressions to a bad purpose, as if they contained obscene thoughts. But this will but little recommend prophane Persons, to those that are serious, and Men of Knowledge, the best Books being liable to be burlesqued, to make sport for the Readers ; nor is it any hard Matter to misrepresent dismembered Words and Passages of any Book; so that any Man may be such a kind

kind of Wit, who will allow himself the Sauciness. — Thus says he, dull Persons corrupted, are regarded, but it is only for their depravity, and they only pass for Wits amongst such as are not so themselves. For Men of Wit only esteem that such, which appears so to their judgment, and not to their Corruptions, and great many will talk tolerably in Derogation of the Scriptures, who upon other Occasions are very dull, and say nothing well but what is ill, if said; and most of these kind of Wits, are guilty of Presumption as well as Prophaneness, some of them pretending to talk Rhetorick more Magisterially than *Aristotle* or *Tully*, and magnify their own Writings above the Bible, or the most esteemed Authors of Antiquity, and as *Asaph* said, *Psalms* 83. 8, 9. *They speak Loosely, they set their Mouths against the Heaven, and their Tongues walk through the Earth.* They speak arrogantly, and censure both God and Man; — and no wonder such transcendently conceited Wits under-value the Scriptures, when they prefer some drunken Song, or trivial Epigram, a Love-Letter, or some flashy Trifle, which discovers a weak Soul, more than an elevated Fancy. Their Songs too like *Antheologies*, only serve to invite Men to drink, or in an Amour, prostitute their Wit, to celebrate the defeat of their Reason; and are proud to be flattered with the vain Thoughts of Wit, magnifying those that magnify them, and think it as great a Proof of Eloquence, to persuade a Mistress she is handsome and adored, whom it would be Eloquence to persuade to the contrary.

To

To discourage Men from such Irreligious Practices, says Mr. *Boyle*, "the highest Applause will hardly recompence the Punishment of Prophaneness, nor will his Name avail in other Books, if blotted out of the Book of Life. And those who covet a future Name by Irreligious Writings, and not to have a Name till the Region of Darkness precedes that future Light, that Ambition must be strange, which beyond the Grave comes short of Heaven; and those Wits must be great Fools, who for Praise they shall never hear, secure themselves Torments they shall never part with. For though Prophaneness may be thought but a small Sin, because but a verbal one, I wish it were well considered, how great a fault it will be to affront God's Word, at that great Day, when the Lord shall come with ten Thousand of his Saints, to execute Judgment upon all, and to convince all that are ungodly amongst them, of all their ungodly Deeds, which they have ungodly committed, and of all their hard Speeches, which ungodly Sinners have spoken against him, Jude v. 14, 15. And though these small Sins in Health and Prosperity, seem not much to blemish our Consciences, yet in Distress or near Death, when God comes to search Men's Hearts, as if it were with Candles, and punish the Men that are settled upon their Lees; Terror then will seize them.

And in another Place, says Mr. *Boyle*, Prophaneness is such an unprofitable Sin, that it only gets an ill Name amongst Men upon Earth, and a worse Place amongst them in Hell, and is such a malicious Enemy to Piety, that he will do Religion harm, though he does himself

himself no good; and further, — a Sin that is so injurious to the Glory of God, and tends to subvert the Immortal Souls of Men, and to destroy them for whom Christ dyed, by being verbal will not be less heinous; therefore to those that commit it, I shall recommend the last half of the Epistle of St. Jude, which ought to make those that consider the Fate threatned to their Predecessors, that were guilty of it, to tremble at their Crime, who upon the Presumption of their great Wit, like Jeroboam, who forsok the Temple, where God so gloriously manifested himself to Mankind, to worship Calves of his own making, disparage the Scripture.

From what hath been hitherto said, it appears, that the Honourable Mr. Boyle was not only Learned in those Languages, which are required to fit a Man for the study of Divinity, but that he made so good a Use of his Learning, and pursued his Studies in Divinity sufficiently to learn his own Duty, and to qualify him to teach it to others. And as he was qualified with the Speculative Part to the highest Degree, so he was careful and diligent to put what he knew in Practice, and as he was furnished with the true Principles of Religion and the Rules of Morality, in which he was exemplary; so he was stocked with Preparatives against the Incroachments of Vice, and Immorality, and was free in communicating his Thoughts to others.

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Having therefore taken Notice of some hints which may be Specimens of his Learning in Divinity, we shall in the next place briefly consider what other Parts of Learning his Knowledge extended to and in which he was Excellent, and made such Considerable Progresses, that he hath taking all together, left no room for any that shall come after, to Parallel him, much less to excel him in; to use the Words of the Learned Bishop Burnet; "He run through the whole Compass of the Mathematical Sciences; and though he did not set himself to spring new Games, yet he knew even the abstrusest Parts of Geometry; Geography in the several Parts of it, that related to Travelling or Navigation, History and Books of Travels were his Diversions. He went very nicely through all the Parts of Physick, only the Tenderness of his Nature made him less able to endure the Exactness of Anatomical Dissections, especially of Living Animals, though he knew these to be the most instructing, this will be very evident to any one, that peruses his Writings, Mr. Boyle throughout several Parts of his Books, as occasion seem'd to encourage him, to illustrate any Subject, making Comparisons or Allusions to several Mathematical, and Geometrical Demonstrations or Questions, which he could with readiness apply to the present Purpose. Nor was he less nice in the History of the Microcosm, or Macrocosm; distinguishing his Knowledge of Human Bodies, and the Art of Physick, by shewing on some occasions as Proofs, what Notions we ought to have of Critical Judgments;

or the Structure of Animal Parts in discovering their Uses and Ends.

But in Philosophy, he made the most considerable Progress; so that it may not lye in the Power of any one perhaps to equal him, especially in that Part of Philosophy which is Experimental; to use the Words of the Learned Bishop Burnet; "But for the History of Nature Antient and Modern, and of the Productions of all Countries, and of the Vertues and Improvements of Plants, of Oars & Minerals; and all the Varieties that are in them, in different Climates; he was by much, by very much the readiest and perfectest I ever knew, in the greatest Compass, and with the truest Exactness. This put him in the way of making all that vast Variety of Experiments, beyond any Man, as far as we know that ever lived. And in these, as he made a great Progress in new Discoveries, so he used so nice a strictness, and delivered them with so scrupulous a Truth, that all who have examined them, have found how safely the World may depend upon them. There was no circumstance in any Experiment he made, which was not taken Notice of by him, with the greatest exactness, and delivered with as much; nor did he miss any Inference, that might be drawn from them, either to the Improvement of *Philosophy*, *Statics*, *Hydrostaticks* or *Physicks*.

But to use the Words and just Character the most Worthy and Learned Bishop Burnet hath made use of, "His peculiar and favorite Study was Chymistry; in which he engaged with none of those ravenous and ambitious designs, that

' that draw many into them. His design was
 ' only to find out Nature, to see into what Prin-
 ' ciples things might be resolved; and of what
 ' they were compounded, and to prepare good
 ' Medicines for the Bodies of Men. He spent
 ' neither his Time nor Fortune upon the vain
 ' Pursuits of high Promises and Pretensions.
 ' He always kept himself within the compass
 ' that his Estate might well bear, and as he
 ' made Chymistry much the better for his deal-
 ' ing in it; so he never made himself either the
 ' worse or the poorer for it. It was a Char-
 ' ty to others, as well as an Entertainment to
 ' himself, for the produce of it was distributed
 ' by his Sister, and others, into whose hands
 ' he put it. Nay, both in his Experiments in
 ' Philosophy, as well as Chymistry, his Labours
 ' had Charity annexed to them; but especially
 ' the later, for as a great many were employed
 ' in prosecuting his designs, so he proved Cha-
 ' ritable to the Persons employed, as well as those
 ' to whom the Products were distributed. He
 ' was Charitable and Liberal, without being Pro-
 ' fuse, and might say to the World upon much bet-
 ' ter Terms than *Horace* did to *Mæneas*,

— *Haud Paravero*

Quod aut avarus ut Chremes terra premam,
Disiectus aut perdam ut Nepos.

He had a Temper serious enough to have ac-
 ' complished and fitted him for a Miser, and Es-
 ' tate sufficient to have furnished him with what
 ' might support Extravagancy; but what was
 ' much better for himself he had Prudence and
 ' Piety

Piety enough to check the later and turn it to better Uses, and had too charitable and generous a disposition to hide that Talent in a Napkin, which did so much good to others; and which he knew so well how to improve, by exchanging it for a more valuable and lasting Treasure.

Thus it appears, how Universal his Knowledge was in all Parts of Learning; but what we have offered here, are but small hints of those brighter Specimens he hath published to the World, of which Bishop Burnet gives this Character, "They are highly valued all the World over, and his Name is every where mentioned with particular Characters of Respect. I will conclude this Article with this, in which I appeal to all competent Judges, that few Men (if any) have been known to have made so great a Compass, and to have been so exact in all the Parts of it as he was.

Hitherto we have briefly endeavoured to represent a faint *Idea* of his Learning and Piety; but though we have insisted on so many Particulars, which as Beams from the Sun, may speak the Splendor of their Original; yet this Knowledge was not all; He not only understood Books and Sciences, but Men, and the Constitutions of their Minds, as well as of their Bodies; and though, as we have before observed, he early withdrew himself from Court, and was not willing to involve himself in troublesome Preferments, or to be valued for empty Titles; yet he was not a stranger to Government, nor without the Knowledge of Men and secular Affairs. Says Mr. Boyle, a Commonwealth being compared

Some Thoughts of his, of Government.

compared to a Ship, the skill of ruling Nations is an Art both noble and difficult, a Ruler being to work upon free Agents, who may have private Interest and Designs, different from those of the Prince, and perhaps repugnant to them. And Prizes in Government are thought so valuable, and so eagerly pursued, that it makes the Rulers of States often misgovern them. But the Infelicities of declining States, are not always due to the Imprudence of Rulers; but the Resentments of such Imprudence, often occasions publick Disorders. And it is a Question, whether it be a greater Infelicity, to have indifferent States-men, or a great many wise Subjects, who are apt to censure what is done by their Superiors, because not done by themselves. And it may be questioned, whether the Respect we pay to Princes, is grounded on our Reason, and our inward Thoughts; for Right in Government, does not employ Skill, nor confer it, a Crown adorning the outside, without enriching the inside; and the Splendor can scarce dazle the Beholders, tho' it does them that wear it, the Jurisdiction of Reason reaching Thrones themselves, though Sovereigns sometimes cannot well avoid what they do.

But further, Mr. Boyle says, it is not a breach of Loyalty, to question the Prudence of a Governor, no more than to think him tall, straight, or sharp-sighted, when he is low, crooked or purblind. A Monarch may command my Life or Fortune, but my Opinion I cannot command my self, it arising from the Nature of the thing I judg of; therefore to think, that all

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things done by Men in Power are done with Wisdom, is too great an Impossibility to be a Duty, and it would lessen the merit of Obedience, which upon that account is paid to the Authority of the Magistrate; since we obey the Injunctions of Lawyers and Physicians, if for our good, though we acknowledg they have no Right to command us. And as the greatest Prince's Actions should be regulated as well as judged of by Reason, so lawful Authority may have a Jurisdiction over my Actions, tho' not my Opinion, and though Authority and Wisdom are obeyed with more Cheerfulness, yet Power unguided by Prudence, may be obeyed as punctually and faithfully.

To which purpose Mr. Boyle proceeds, I would not oppose a Magistrate I cannot esteem, and though I may see the Folly of a Prince never so great, I can reverence Authority in the weakest. But this is not only difficult to do, but what perhaps is not usual; yet it would not be amiss if we did it more; for as Human, especially Political, Matters are attended with a great variety of Circumstances, some of which, or others, may be differently considered and estimated; so it is not difficult to represent most Actions, Politick, or otherwise, as those Circumstances are considered, which may excuse or discommend them. So that those Councils, which are capable of several Constructions, ought to be favourably censured; and I should use the Fathers of my Country, as *Noah's* Children did their sick Father, who when they saw their Fathers Nakedness, covered it, being willing to see no more of it than was necessary to hide it.

But further, says Mr. Boyle, the Vulgar, who are the greatest and loudest part of them, that concern themselves with State Affairs, and find Fault with their Management; are but incompetent Judges of Politicks; for to judg of things by Success, is to forget the wise Disposer of Events, and contrary to the Opinion and Custom of the Wise. Besides, the Vulgar have not a sufficient Prospect of the true State of Affairs, to enable them to judg of them; and are unacquainted with the Motives of the Princes designs or counsels; so that that which to them seems Imprudent, may in respect of other designs be Politick enough; and a private whisper from an unsuspected Spy, or things unthought of, by those concerned in State Affairs, may make Proceedings seem imprudent, which they cannot be acquainted with, those private Reasons being as unfit to be divulged as obeyed. So that only Pride and Ignorance give the Vulgar occasion often to complain, and when they judg upon incompetent grounds, they may be mistaken, when even their Superiors are in fault. Not but that such as have Parts and Opportunities, and have suitable Conditions, and know their Interests and Designs, may judg of their Counsels, and know their Mistakes.

But for ambitious pragmatical Inferiors, says Mr. Boyle, to correct the Government, is no less prejudicial than common; for when it is decryed at home, it encourages Foreigners to subvert a State, and make the Subjects despair of preserving it, little considering, that Imprudences in Government are much less prejudicial than a Subversion, whether by a Foreign

or an Intestin Power, such Changes entailing upon an unhappy Country, the greater Misfortune of War. And though the right of Government confers not Skill, yet it is better to stand by the former than to oppose it, tho' it wants the later; for the right is commonly inherent in one, or but two or three, but skill is so undetermined a thing, that every Man would flatter himself capable of Sovereignty. And where the craftiest or the strongest might preside, there must needs be frequently Vicissitudes in Government and Governours, since he that could get an Interest amongst the Souldiers, might assume the Government by Power.

He further observes, what Confusion might happen by every Body's pretending to a right of Government, and pretending to Counsel or Command, and none to Obey: to which he adds, that Magistracy being instituted by God, for the good of Men, we may by obeying Magistrates less Wise than our selves, or than we could wish, reap several Advantages of our Obedience, besides those Blessings which God bestows upon those that are Obedient to his Vice-Gerents on Earth. We may wish for wise Princes, but ought to submit to those which Providence and the Laws of our Country hath given us. We ought to assist with the wisest Counsel we can, and to make the best of the unwise Counsel he hath taken, not adding Faction to Misgovernment; for the Happiness of a Common-wealth consists, not only in the Prince commanding, but also in his Subjects obeying well; and weak Counsels assisted by those that execute them, may be less prejudicial, than

the jarring Endeavours of those who perhaps might govern more wisely. Affection and Diligence in Publick Services may, in spite of Mis-carriages, prevent or lessen the ruin of a State. However, it will be a satisfaction to an honest loyal Subject, that he hath no ways contributed to Publick Calamities, and he will bear those Calamities better, when they are not attended with publick Guilt. Nay whatever Service we do to a Prince, as God's Vice-gerent, is ultimately done to that Supreme, which the Scripture calls the *only Potentate*, whose Munificence is inexhaustible; and whatever we have suffered in Obedience to his Commands, we may expect to be considered in reward of our Obedience.

And as Mr. Boyle thus briefly represents, how Rulers ought to be esteemed by their Subjects and Inferiors, and how the latter ought for their own Interest to respect and be obedient to the former; so on the other hand, he elsewhere shews, how Superiors ought to be Exemplary to their Inferiors; and represents the good Effects of it. Says he, some Men who were subject in a private Condition to Vices, lay them aside; and when elevated to Honour, improve by their Stations, being vicious before, because depressed below their proper Sphere. And indeed, says he further, a Throne not only affords Temptations to Vice, but Engagements to Vertue, and though so high a Station may make a Man giddy, yet it is enough to make him circumspect, since the Eyes of the World are upon him; and indeed, so sublime a Station would make a generous Soul despise mean things,

things, which Inferiors are prevailed on by. Princes that have Shame or Honour, will consider, that there are too many Eyes upon them, to keep their Faults secret and free from censure, which Men are the more severe in, because Reputation is all that Subjects can punish their Sovereign in. A generous Mind will make them ambitious of Glory, which Monarchs cannot pursue without great and good Actions. And if they have a respect to Piety, being God's Vice-gerents, they cannot but in Gratitude to him, promote his Interest, and imitate him in his Attributes of Clemency, Justice and Bounty, as he hath given them Power and Authority. Besides an Earthly Crown leaves us nothing but a Heavenly Crown to aspire to, and considering the Advantages they have of doing Good above others; so their Examples have a great Influence either in Virtue or Vices; and what a great Account must they give one Day, of Thousands committed to their Care, which they ought to be careful to make a good one.

And to shew, how prevalent good Examples are in Princes, as well as how observant Subjects should be of them. Mr. Boyle further observes in another place, in respect of Customs, it would be odd for one in another Habit to come to Court, since he would be stared at as a stranger, and one unacquainted with the place; and though there are no Laws made to the contrary, to forbid such things; yet not to comply with Custom and the Rules of Civility, not only makes a Man look like a Stranger, but a Player rather than a Courtier. This may give

us occasion to think ; since Customs are so prevalent, what a happiness it would be, if those who have the Power to introduce Customs would make good ones, the imposing and reforming of Fashions being more Noble, if well used, than the Splendour and Pleasure they live in ; the Authority of raising Armies, or the Happiness of being Victorious ; and it is a much more improveable Prerogative to introduce good Customs, than to coin Metals into Money and make it current.

And further, he says, though Princes do well in making good Laws, and taking care to execute them to preserve the Peace of Human Societies, and to restrain them from doing Mischief, yet there are a thousand Rules of Reason or Christianity, which Laws have no Influence on, which are contrary to the Laws of Nature and Christ, and Multitudes may pass uncited, before Man's Tribunal, which may receive Condemnation at God's. But though Laws cannot prevent such sins ; yet Example may do much, and a Princes Declaration of what he approves or disapproves, will have a great Influence on those about him, which will be further Examples to the rest of his Subjects.

*His
Thoughts of
a private
Country
Life.*

Having thus briefly represented his Thoughts of Princes, and Courts as well as Government, we shall next observe something he hath given us a faint *Idea* of his Thoughts in, of the Happiness and Innocency of a Country Life, of which he expresses himself to this Purpose, viz. Though Villagers seem to be a wretched sort of Creatures ; yet their Condition seems to make them

them happy, and also to keep them innocent; being contented with a cheap way of Living, answerable to Natures Bounty, and an easy Industry. Whereas amongst Persons of Quality it is looked upon as want of Breeding not to think themselves unhappy, if they have not a Thousand a Year. But Innocence and Contentment depend more upon a Man's Mind, than the Condition of Life, it not being always the occasion or object, but the degree that makes the Affections unruly and troublesom; nor is the Intrinsick value but the Rule put upon things, that makes them affect the Passions. — And though Courtiers and Gallants have greater Temptations to Sin and Discontent than Country People, theirs may be as great, though not so specious, their faults and infelicities being not so much taken Notice of, their Persons and Conditions being more obscure; for their Poverty conceals their Vices as well as their Vertues from us. But if we should enquire into them, the Inferior Country People are not without their Parties and Intreagues, as far as their Wits will allow. And the lowest Cottage hath Care proportionable, attended with Malice, Covetousness and Envy, if those that dwell in them are minded to entertain them. And the meaner necessitated sort of Men are subject to some sort of Vices, as thatched Houses are more Subject to Spiders and Cob-webs than great Men's Houses. Though, says Mr. Boyle, I should be apt to think, these Men happy, if they thought themselves so; but the Poms and Vanities of the World are often stronger Temptations to these, than to Grandees and Courtiers;

tiers; for those that are possessed of these Imaginary Joys, are convinced that they are envied without Cause. When I was conversant in great Men's Houses, I found their Course of Lives, convinced me as much of the Vanities of the World, as Sermons could convince them; whereas the Country People only see the glittering Outfides of Vanity and Greatness, and in the most favourable Light, which is apt to tempt them to admire and envy their Condition, and to repine at their own; every gaudy trifle in a Country Town, being apt to make a Country Man gape and admire them. And a Country Maid we think so happy, may perhaps envy some Neighbouring Country Farmer's Daughter for a tawdry Ribbon, or a black Hood; for it is not a Man's outward Condition, but his Temper and Mind that makes him Subject to Temptations to Sin and Discontent.

*His
Thoughts of
Courtship
and Ma-
trimony.*

Having thus briefly represented Mr. Boyle's Thoughts of the several Stations and Conditions of Mankind, as they are placed in Greater or Meaner Stations and Circumstances, since Courtship and Marriage are two Distinct Conditions of Life, though near akin, that make Men happy or otherwise, we shall next observe some Passages and Expressions of his relating to those. As for himself, though he was not against Matrimony in others, yet his own Choice was to Live a Single Life, though it were a pity so Noble a stock should not have produced some branches of the same kind. As for Courtship, he says, I have sometimes been Satyrist enough. to endeavour to disabuse those

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Servile Souls, who being born to Reason, only boast an Excess of Passion, and had such narrow Thoughts of Happiness, and Misery, as to expect either from a Woman's Usage. And this I thought I might the more freely do, because having never known the Infelicities of Love, except by others sufferings, my declaiming might be taken for the Effect of Reason, and not Revenge. But though some Men's Folly hath been so great, that I could not avoid Laughing at it, yet I am not so much an Enemy to Love, except in excess or misplaced, to represent the Noblest Passions of the Mind as a Hideous and Formidable Disease.

And in another place, in respect of this Passion he says. He that presents his Heart to Mortal Beauty, exposes it to be Wounded in her Breast, and those Misfortunes become his, which would otherwise terminate in her, and the Felicity of two Persons grows requisite to make one happy. Exposing our Hearts to Mutual Objects, says he, enlarges the Mark for Fortune, and makes it liable to be wounded in more Places; for though Love may make us partakers of the Joys as well as of the Infelicities of the Parties loved, yet the most happy in this Fickle and Tempestuous World, meet with so many more Stormy than Prosperous Gales; and we are so much more sensible of pleasure than pain, that even Friendship, which is a much calmer Affection than Love, ought to be avoided, as injurious to our quiet, as it is a partnership of Fortune, not as it is an Exercise of Vertue.

And

And Mr. *Boyle* elsewhere speaking of the Torments and Disquiets that attend sensual Love, says he. Indeed I cannot say, that many have dyed for it, except as Reason may be said to be the Constituent Part of a Man, Love dethroning Reason; for though it leaves the Lover alive, the Man may be said to be killed. But though Love destroys not Men's Lives, it much disquiets them. Lovers must be a long while Servants, before they have the Honour of being taken Notice of as such, and the Torments that Lovers feel, are often called Martyrdoms, which perhaps is not without some Reason, if the Greatness of the Torment, without the Cause and Object were sufficient to make them Martyrs. And though Romances represent Lovers so dexterously, that their Readers admire and envy their Felicity; yet I have been so much concerned for some engaged in such Adventures, that Envy was soon turned into Pity; for though the Repulses, Regrets, Jealousies, Fears, Absences, Despairs and the other Disquieting Affections of Lovers, are soon read by the diverted Peruser; yet they are not easily supported by the disconsolate Lover, and though they may be handsomly expressed to divert the Reader; yet it is much happier to be free from Misfortunes, than to be able to talk Eoloquently of them.

And further, he says, Objects of Love, which charm us at a distance, whilst gazed on with Expectation and Desire, when once possessed, their former Lustre vanishes, and they appear quite different things, though Absence in a little time makes us forget their Emptiness, and

at a Distance, they are as apt to deceive as ever.

But says Mr. Boyle, though I am not so adverse to Matrimony as some think me, and would not refuse Advice, tho' I should be loath to be an Example; yet I have seen so few happy, and so many unhappy Marriages, and have so seldom seen Men Love their Wives, as they did their Mistresses; that I wonder not, that Law-makers made Marriages undissolvable to make them lasting. For it is like a Lottery, he that ventures may lose, as well as win, and there are a great many Blanks to one Prize.

But as he shews us the Difficulties and Dangers of Lovers, and the frequent Misfortunes of Matrimony, yet Mr. Boyle tells us, how those Dangers ought to be prevented. Says he, Passionately to love a Person you would Marry is both requisite and expedient, to fix your Affections, where you have engaged your Faith; for Love is seldom confined except by Matches of it's own making, and few that see not cause enough to be in Love beforehand, prove constant afterwards. Since then the Marriage of a Wise Man, supposes as much Love, as he can be capable of, without loosing that Title, to be moderately in love cannot but be injurious to Marriage, which is a state I can allow others more easily than contract it my self; yet I cannot condemn such a Condition of Life, as if it were Expedient to none, since without that Paradice and Innocence could not compleat the Happiness of Adam. And further, he says, there is a certain Degree of Love for a Friend, a Mistress,

Mistress, or a Wife. And again, a Vertuous Wife may Love both her Husband's Relations and her own, and yet Love him with her whole Heart, there being a peculiar unrivalled sort of Love, which constitutes true Conjugal Affections, which she reserves intirely for him, and would be Criminal to Harbour for any other Person.

His Wisdom and other Endowments of Mind.

Having thus far considered his Thoughts in respect of secular as well as spiritual Affairs, and briefly represented the wonderful Progress he made in respect of both, and that he was, not only Learned in Sciences, but well acquainted with the Affairs of Mankind, to illustrate what we have said in respect of both, and briefly sum up the great Extent of his Qualifications of Mind, we shall here observe some particular Tokens and Marks of his great Wisdom and Sagacity, which besides his great Learning & Knowledg, may be some small Addition to the faint *Idea* we have given of his Character. Amongst the rest of those Marks of Wisdom he was so plentifully stored with, to use the Words of the Learned Bishop *Burnet*, "He could well
"be Silent, and by practising that much, he
"covered himself upon many Occasions. He
"made true Judgments of Men and Things.
"His Advices and Opinions were solid and
"sound; and if Caution and Modesty gave too
"strong a Byass, his Invention was fruitful to
"suggest good Expedients. He had great No-
"tions of what Human Nature might be brought
"to, but since he saw Mankind was not capable
"of them, he withdrew himself early from
"Courts and Affairs, notwithstanding the di-

stinction

distinction with which he was always treated by our late Princes. But he had the Principles of an English-man, as well as of a Protestant, too deep in him to be corrupted, or to be cheated out of them; and in these he studied to fortify all that conversed much with him; so that what the Prophet said, might well be applyed to him, viz. *That those that turn others to Righteousness shall shine for ever and ever.* And as he looked upon it as so good a Work, he both made it his own Business, and endeavoured to perswade others to follow his Example. Says he, if we have any Friends, that stand in need of this kindness, let us not be discouraged by their coldly receiving our Admonitions, though they look upon them as disturbances; for, not to say, that the less they are desired, and the worse they are entertained, the more they stand in need of them; a Christian is not so much to consider the success of his Endeavours, as to leave it in their Power to make him unhappy, whom he reproves, when he may miss his Aim, without loosing his Labour, since the Master he serves, is as ready to reward, as able to discern Intentions; for if your Endeavours succeed, you will at once make a Man your Friend, and also worthy to be so; and scarce any Men are more affectionate, than those who are made Friends, by making them Enemies to Vice.

But to proceed to those other Marks of Wisdom, which beautified his Mind, in Bishop Burnet's Words, "He had a very particular Sagacity in observing what Men were fit for; and had so vast a Scheme of different Performances,

‘ Performances, that he could soon furnish every Man with Work, that had leasure and capacity for it, and as soon as he saw him engaged then a handfom Present was made, to enable him to go on with it. And thus he employed a great many, not only in his Philosophical, but Chymical Experiments.

His Devotion.

And as a further Argument of his great Wisdom and Prudence, instead of those loose and sensual Pleasures which the Generality of Men entertain themselves with, his spare hours were always employed in useful Meditations, and solid Conversation; and as Bishop *Burnet* testifies; “ He had indeed nothing of Frolick and Levity in him, he had no Relish for the Idle and Extravagant Madnes of the Men of Pleasure, he did not waste his time, nor dissipate his Spirits into Foolish Mirth, but he possessed his own Soul in Patience, full of that solid Joy, which his Goodness as well as his Knowledge afforded him. He who had neither Desires nor Passions, was capable of little trouble from any concerns of his own. He had about him, all the tenderness of good Nature, as well as the softness of Friendship, these gave him a large share of other Men’s Concerns; for he had a quick Sense of the Miseries of Mankind. He had also a feeble Body, which needed to be looked to the more, because his Mind went faster than his Body could keep pace with it, yet his great Thoughts of God, and his Contemplation of his Works, were to him Sources of Joy which could never be exhausted.

What

What we have hitherto said may in some Measure faintly delineate the Character of this Great Good Man, who indeed, as Bishop *Burnet* says, *was one of a Thousand*, nay of a great many Thousands; his Vertues were so conspicuous and pure without spot or blemish, and his Wisdom and Knowledg so astonishing and extensive; and his Performances every way so much to be admired, and so much esteemed and valued all the World over. These will be lasting Monuments of his great Worth and Merit, and perpetuate the just Memory of him with the highest Esteem to future Ages; which since they are noble Specimens of the large Capacities and Endowments of his Mind, and argue a Soul attended with all the bright Qualities and Perfections belonging to a Rational and Human Soul, and were a great Part of a Life not only well spent, but as diligently employed. We shall here give a Brief and Summary Account of those Works, which have not only spread his Name in this World; so that it must never dye whilst Learning is valued, but hath placed his Immortal Fame as well as Soul amongst Saints and Angels.

And since the Soul is more valuable than things Corruptible, and the Knowledg of Divinity tends not only to improve the Welfare of our Souls, and to secure us Everlasting Happiness, but as *Mr. Boyle* hath observed, enables us to make a better use of our Knowledg of other things, we shall first give a succinct Account of his Theological Works, and then proceed to give an Account of his Philosophical Writings. In which we shall not observe any strict Method

*An Account
of his Theological
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as to the time of his Publishing those Books: nor shall we exactly register them as they might be Reasonably placed in a continued Discourse, but as they may in this place, best illustrate his Character, which is the present Intent of this Essay. And *First*, of his Theological Works.

The Martyrdom of Theodora and Didymus.

The First of his Theological Works we shall take notice of, is, *Love and Religion*, demonstrated in the Martyrdom of *Theodora* and *Didymus*. This Book he wrote in his tender years, though it was not published of a long time after. In this Tract he shews, how Love and Christianity may be consistent, and entertained in the same Person, and that pure and sincere Love destroys not Christianity, though Christianity contributes to preserve that Passion free from those Blemishes, which exposes it to the Criminal and Ignominious Titles of Vice. And though the Passion of Love may move us to contribute what in us lies, for the Preservation of the Object of it, yet Christianity limits it to just Bounds: and as the Love of God, and the Happiness promised in another World, is more inviting & to be preferred before those fading Objects in this World; so a Christian ought to make that his chief Aim; and no Dangers, not even Death it self, ought to deter us from pursuing those Ends which are more valuable than all the World. To be brief, this Tract not only gives us good Examples of Love and Honour, as consistent with Christianity, but shews, that as Love ought not to byass or divert us in the way to Heaven; so a Christian ought to behave himself with the greatest Courage and Resolution to gain that Prize, which our Saviour purchased for us with the Price of his Blood,

and

and that we cannot suffer too much for that Cause, since we are to be rewarded with Eternal Happiness. This Tract shews, what early and great as well as solid Thoughts Mr. Boyle retained of Christianity, when his Years might have inclined him to give way to that Passion of Love which is apt to divert others Thoughts from Christianity.

The next of his Theological Works we shall take notice of, is, his *Seraphick Love*. In this Tract he discovers the Vanities of Love placed upon Earthly Objects, and invites us to fix it upon God Almighty; and having represented the Inconveniences that attend our Enjoyments here, he shews us the Beauty of Heavenly Objects, furnishing us with Arguments to direct our Love to God; and though we are not wholly to despise temporal Things; yet our Love of them ought to be limited, and chiefly to be fixed upon the most desirable Objects, which instead of deluding us with fading pleasures rewards our Love with more valuable Returns; Everlasting Happiness reserved and prepared for those that Love God; and to make us the more Intent upon such Objects, he represent to us those Joys of Heaven, which though at the present beyond our Conception, will be much more pleasant in the Fruition, when our Capacities and Knowledge of them shall be enlarged. Whence it appears, how much this Good Man had diverted his Thoughts, and refused to fix them upon corruptible Things, which like an ill Foundation cannot be lasting; and how far he had placed his Affections on things above which are everlasting. He had too true a prospect of

*Seraphick
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the Vanities of this World to doat on them, and too bright an *Idea* of Heaven, not rather to make it his Choice, and fix his Love, where his Heart was, and where he now enjoys those Celestial Pleasures, he so long thirsted after, conversing whilst he was on Earth with Saints, Angels and Seraphims, in strains beyond the common pitch of Mankind.

*The Style
of the Scrip-
tures.*

And as he made Divinity his early study, so he endeavoured to recommend it to others, and to shew them the value of those sacred Writings; the better to engage them in the Study of it, and to take off those Imputations, which have been so prejudicial, he hath wrote an Excellent Tract in Defence of the *Style of the Scriptures*, where he hath learnedly examined and answered all those Objections which Irreligious and Profane Persons have made against it, to undervalue a Book so worthy of it's great Author. In this it appears, how well versed he was in the Scriptures, and how exactly he had studied, and taken Pains to understand those Languages which might be requisite for one that would understand that Book, and make themselves Masters of it, so far as might enable them to explain it, and write in it's Defence. This Book is not only a Specimen of his Skill in the Oriental Languages, and what Pains he took to Study the Scripture, and a good defence against those Groundless Objections raised to undervalue it; but he hath likewise produced good Arguments to induce others to the study of it, especially those who are not only concerned for the Welfare of their own Souls, but have also undertaken the Charge of others; offering the

best

best Motives and Considerations to perswade them to a study of everlasting Consequence, which he shews should not only be their chief and principal, but their daily Study. He further represents the Danger of Burlesquing and Prophaning the Word of God. Which shews, what a profound Veneration he had for those Writings which were endited by God Almighty's Secretaries, and attested by his own Authority, proving themselves by their Doctrin to be of Divine Origin.

And as he had a profound respect for those sacred Books, which were dictated by God himself to his Divine Pen-Men; so he had a firm Belief of whatever Doctrins were delivered by such great Authority; he not only believed the Mystery of Man's Redemption and the Incarnation of our Saviour Jesus Christ; but also of the Resurrection of our Mortal Bodies, which after Death must come to Judgment; and to confirm others in the same Faith, hath wrote a Learned Treatise of the Possibility of the Resurrection, deriving his Notions of the Identity of the rising Body from the true Sence of Texts of Scripture, and shewing how durable the Parts of Matter are in many Cases; so that though they may seem to undergo several changes, still retain their pristine Natures; so that it might not be impossible but that the same Particles of Matter might be again united, or that others joyning with them might form the same; since several things are esteemed the same, though there happens almost, if not altogether, a total Addition or Access of fresh Parts of Matter. But the Notion of Identity hath

The Possibility of the Resurrection.

occasioned a great many trivial Disputes about that Subject; He was too well satisfied of the Authority of the Scriptures to dispute what is there asserted, and he was sufficiently acquainted with Philosophical Principles, to be able to demonstrate what is there asserted consonant with Reason.

Of the Veneration due to God.

And as he was well acquainted with the Word of God, and had a just value and veneration for it; so he was very well skilled in, and had a great Knowledge of, his Visible Works. He was not a common Gazer, that admired the outside of things, but had Skill and Knowledge as well as Sagacity and Judgment, which were strengthened with Industry to dive into and search out their Natures; he was well acquainted with the Connection of Things and their Causes, and not only Physick and Philosophy gave him a great View of the Microcosm; But his Skill in Mathematicks, Geometry, & Astronomy raised his Knowledge above the Clouds. He could observe and admire those Celestial Bodies which move perpetually in vast Orbs above, as well as the Intestin Motion of Parts of Matter within our own Globe. This gave him a vast Advantage in admiring the Attributes of God, seeing the wonderful Effects of his Wisdom and Power; and as he had so great a Knowledge of the Infinite Perfections of the Author of all things; so it raised in him a just Veneration for that God, who communicated that Knowledge, and was the Author of those things that were the Subjects of it; And as he had a great Veneration for God, so he wrote an Excellent Tract, to shew his Fellow Crea-

tures

tures what Veneration they ought also to have for the Author of their Being. In his *Treatise of the Veneration due to God*, he shews us, what great Reasons we have to admire, venerate and adore that God, so Infinitely Wise, Powerful and Good; and having considered his Attributes and furnished us with Arguments sufficient to raise our Admiration, and to produce a due Veneration in others; He not only represents God Almighty's Attributes and Excellences as Motives and Inducements; but as a further Reason of admiring the Infinite Perfections of God, he represents, the narrowness of our Intellects, and the limited Bounds of our Capacities, shewing how vastly distant Infinite is from what is Finite, and that the small and superficial Knowledg of those things we know is far short of the Knowledg which none but he that is Infinite can understand.

And since vain Man, though as a Worm and of a narrow and limited Capacity, would needs *Of Things above Reason.* think himself so wise as to be able to understand every thing, and is apt to flatter himself, that he knows, what he does not understand, and therefore judges too frequently, that those things which are above his Capacity are beneath it; and being too proud of his small Knowledg, is apt to think that whatever does not quadrate with his Reason must be contrary to Reason, and consequently unreasonable; Mr. Boyle to convince Mankind of so gross a mistake, hath wrote a *Treatise of Things above Reason*, where he makes it appear, that several things, which we judg to be contrary to Reason, because beyond the Verge of our Understanding, are not therefore to be thought unreasonable.

ble because we cannot comprehend them, since they may be apparently Reasonable to a greater and more comprehensive Understanding; thus Men know more than Children, and Men of Learning see the Reason of Things which illiterate Persons understand not, and are apt to censure as Erroneous; because not agreeable to those Thoughts and the Knowledge they have to make Judgment by. And as Infinite Understanding is above Finite, so what appears inconsistent with our Reason, is agreeable with his Wisdom.

Advices about Things above Reason.

And having made it appear, that there are several things above Reason, he hath wrote another Tract, exhibiting *Rules or Advices in judging of things above Reason*, which may regulate our Judgments, when we meet with such things as we do not understand, as being above the reach of our Reason; for as there is a difference betwixt knowing the Nature of a thing, and being able to give an Account of our Inducements to believe it; so we may have Inducements to believe some things, whose Nature we are not able to understand; and since there are several Mysteries in Scripture, which we cannot reconcile to Reason, because they are above our Capacities, we ought to be cautious how we censure the Dispensations of Infinite Wisdom; because above the reach of our Finite Reason and Understanding, and as it would be Presumption for us, to think ourselves as wise as our Maker; so it is much more for us, to pretend to censure and undervalue what he approves; and as we cannot without Vanity pretend to know, except in part, those

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things which are about us; so those of a much superior Nature and abstruser, must not be disbelieved without good Grounds, no more than they ought to be believed without Proofs sufficient in their kind. To prevent which Errors in Judgment, Mr. Boyle hath in this Tract proposed, Advices and just Cautions to prevent us from being imposed upon by our own Errors, or the Mistakes of others, telling us, what Proofs are sufficient in their kinds, and how far we may question, or ought to give our Assent, to things that are above Reason, or appear so.

And as Mr. Boyle had a due Veneration, both for the Sacred Writings as well as their Author, and took Pains to undeceive the World, in those gross Mistakes, which occasioned a great many to have a slight Opinion of what they ought so much to esteem and value; so he took a great deal of Pains, to undeceive Mankind in some mistaken Notions they had entertained, which he thought and knew proved prejudicial to Piety and Religion, and might lessen the just Esteem they ought to have of a Deity and the true God; and since the vulgar Notion of Nature seems to rob God of the Honour and Veneration due to him, since the World is apt to ascribe those wonderful Effects to Nature, which are only to be ascribed to God; He wrote another Treatise entituled, *A free Enquiry into the received Notion of Nature*, wherein he shews, what Erroneous Opinions not only the Vulgar have entertained of Nature, but those who have acquired the Names of Philosophers, derogatory to the Honour of God, and

A free Enquiry into the vulgar Notion of Nature.

and destructive to that Adoration and Veneration we ought to pay him. He not only shews, how grand a Mistake it is, to ascribe Effects to Nature, which are only produced by the Wisdom and Power of God, since Nature is a supposititious Being only, and not a real one, but having refuted the Vulgar Notion of Nature, he tells us, what Opinion we ought to have of her. And as *Aristotle* hath falsely attributed a great deal to this fictitious Goddess, and hath formed a great many Axioms grounded upon a supposition of her Existence, he refutes his Opinions; and not only shews his Axioms to be ill grounded, but tells us, in what Sence they ought to be explained. He likewise shews us, what Errors these Notions have led the Moderns into, and what Idolatrous and Pernititious Superstitions the Antients were misled into, by their mistaken Notions of Nature, and their *Anima Mundi*, which he traces down from the *Sabeans* to future Ages; and having thus discovered the Impositions proceeding from such ill grounded Opinions, he shews the necessity of a Deity, and that the World and all the Effects produced by second Causes owed their Origin to a Supreme Omnipotent and Omniscient God; having thus discovered those vulgar Errors and their ill Effects, and proved the necessity of a God, he briefly enumerates those Advantages that may accrue to Piety and the Christian Religion, by detecting those Errors; and as his design in all his Works, tended to the Glory, and to raise a just Veneration for his Maker; so he could do it no better way than

than by promoting his Honour, and proving his Existence.

And as he thus proved the necessity of, and consequently the Existence of a God; so he took as much Pains to convince us of his Providence, and in proving his superintending Power by its visible Effects, in *An Essay about Final Causes of things Natural*. Wherein he enquires not only generally and indefinitely whether there are any Final Causes of Natural Things within the Scope of a Naturalist's Knowledg; but whether we may consider Final Causes in all sorts of Bodies, or only in some particularly qualified; as also, whether, and in what Sence, Ends may depend on Unintelligent or Inanimate Bodies; and further, what Cautions are to be used in forming Arguments upon a supposition of Final Causes; and not to mention the distinction he makes of Final Causes, he was so well acquainted with comparative Anatomy, especially with the different Structure of some Parts of Animals, that he was sufficiently stocked with Arguments from their several Uses, to prove the designs of Providence, by undeniable Instances; every Creature of different Species, being furnished with Parts suitable to the Ends designed; and as the Structure of Parts of Animals, were good Instances of the Superintendency of Providence, so the Dispensations, and the orderly and regular Contrivance of the Universe, were no less prevailing Instances; Mr. Boyle was so well acquainted with the whole Frame of Nature, that he could well discern the mutual concurrence and dependence of every Part, to compleat the symmetry of the whole, having searched

A Disquisition of Final Causes.

ched into the secret Contrivance of God Almighty's Works, as far as Human Capacities extended to the utmost would admit; and therefore he could not want Arguments or Instances to prove and illustrate, that Providence that furnished him with Abilities, both to discern and make use of them. His own good Works were Arguments sufficient to prove a Providence to those who received what he was intrusted to communicate to them; and his great Performances proved the great End he was made for.

*Observations of Viti-
ated Sight.*

In proving the Superintendency of a Providence and Final Causes, he made use of several Instances infered from the particular and different Structure of the Parts, especially of the Eyes of Animals, and though his own Eyes were weak, he was so well acquainted with the Structure of those Parts, that he could easily discern the Imperfections of others, which he as well distinguished; though it might be wondered, that one that could see so little, should discern so much; but he made several *Observations of Vitiated Sight*, and so exactly, that it confirmed his Knowledge and Sagacity, as well as Accuracy extraordinary in whatever his Curiosity inclined him to, and the brightness of his Capacity, like those of the Sun Beams, displayed it self wherever it went.

*Occasional
Meditations.*

The great Knowledge he had in Divinity, which he had so industriously studied, and was so perfectly acquainted with, enabled him to read Divinity in every thing he cast his Eyes on; and his Skill in, and Knowledge of, the Works of Nature, made such Divinity Books

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the larger; so that his leasure Hours were always employed in good Thoughts, and as he made good Use of his own Time; so he shewed others how to do the same, in that Excellent Book of *Occasional Reflections*, to which he hath prefixed, a Treatise or Discourse of *Occasional Meditations*, in which Discourse he represents the Usefulness of such Meditations, and makes Use of several Motives and Inducements to persuade others to do the same. Whatever he saw, gave him such Noble Thoughts, and Custom made such Reflections so familiar, that he like the Bees sucked Honey out of every Bough; He took so much delight in such Reflections, and was so happy in his Thoughts, and his sagacity and quickness of Apprehension suggested them so readily, that he could easily turn any Subject to his advantage; and as he says himself, when once the Mind is set at Work, the first Thoughts may be the Subjects of further Meditations, and the connection of Thoughts within the Mind, is frequently so strange, that the Contemplator himself will often admire to see how far his last Thoughts are removed from his first Meditations. And such incidental Excursions may sometimes as much delight and surprize him, as the Honey in the Carcass of a Lyon did *Sampson*, *Judg.* 14. 8. Mr. Boyle had such copious Thoughts upon every Occasion, and such a readiness of Wit, that like a Multiplying Glass, every single Object was represented with a manifold Advantage. The feeding of a Dog; The Beggars on the High-way; The stumbling of a Horse; The sight of a Wind-mill; The paring of
of

of an Apple, and so trivial a thing as a rusty Horse-shoe, furnished him with Reflections worthy our Reading; and the darkest Cloud afforded Light to his Understanding. His Diversion afforded Information, and his Sickness was a School of Divinity, and though he walked through Weeds, and amongst Places frequented with the most despicable Creatures, he could convert the former into a Garden of Flowers, and trace the Footsteps of his Maker amongst the later.

The Christian Virtuoso.

He knew the Works of God so well, and was also so intimately acquainted with his Word, that every thing tended to make him the better Man, as it improved his Knowledge, and the better Christian, as he made a pious Use of it; even Philosophy taught him Divinity, and he made use of it to instruct others, the same way; to which end he wrote the *Christian Virtuoso*, in which he shews, that the want only of a pious Disposition, inclines those that study Philosophy, without an due Knowledge in Divinity, to convert it to a ill Use; whereas those that are first well instituted in Sacred Things, easily discover a God in all his Works. In this Book he shews, that Philosophy not only teaches us the Fundamentals of Natural Religion, but consequently affords us Arguments to prove the Truth of the Christian Religion; so that a Philosopher not only grows wiser in the Knowledge of Natural Things, but the further he searches into that Knowledge, the clearer he discovers the appearance of a God, and more plainly discerns the Greatness of his Wisdom and Power.

To

To this Treatise entituled the *Christian Virtuoso*, he hath annexed, *Reflections upon a Theological Distinction*, according to which it is said, that some Articles of Faith are above Reason, but not against it; in which he shews, that by things above Reason, he means, such Notions as Reason, without the assistance of supernatural Reason, would never discover; whether comprehensible to our finite Capacities or not; and that there are several sorts of Things above Reason; and having enumerated their kinds, he makes it appear, that though they are above Reason, they are not against it. And having represented the Use of this Distinction, he shews further the ill Effects of it, when misapplied, and adds some Arguments in favour of Mysteries.

To the same Book, entituled the *Christian Virtuoso*, he likewise adds another Discourse of the *Greatness of Mind promoted by Christianity*, where he shews the Errors of the Common Notion, and represents in what Vertues true Greatness of Mind consists.

And as in the *Christian Virtuoso*, he makes it appear, that Philosophy assists us in demonstrating the Grounds of Natural Religion, and furnishes us with Arguments which lead us to the Knowledge of Revealed Religion; so in the *Reconcilableness of Reason and Religion*, he shews us further, not only how Philosophy may be conducive to, and furnish us with, Arguments to strengthen our Belief of the Christian Religion; but also he shews us, how far Reason may guide us in confirming our Belief of the Mysteries of Holy Writ, and consequently of

The Reconcilableness of Reason and Religion.

of the Truth of Christianity. In this Book he not only shews us, how Men become guilty of Mistakes in judging of such Truths as are above the reach of our Reason, and admonishes us not to be too forward, in concluding things unreasonable, that surpass our Reason; but shews us Examples in Natural things, where our Reason is at a loss in reconciling such things to it, tho' we are assured of the Truth of them; knowing their Existence, though not the Modus of their being performed; and he likewise shews us, that several things in Nature would be thought as incredible as the Mysteries of our Faith, were we but as much strangers to the Mediums of Proof, as several Geometrical and Mathematical Demonstrations, and the various *Phænomena* of the Load-stone, which to one unskilled in them are incomprehensible & incredible. But for a further Character of this Book, we shall refer the Reader to the Book it self.

The Excellency of Theology.

The next Book we shall take Notice of, wrote by the Honourable Mr. Boyle is, *the Excellency of Theology, or the Pre-eminence of the Study of Divinity above that of Natural Philosophy.* In which, he first represents the Excellency of the Study of Divinity, to excite us to pursue it, since it not only teaches us the Nature & Will of God, but tells us what Judgment we ought to make of Men's Lives; and as Divinity teaches us several things, which we should be ignorant of, without it; so our Knowledge of Natural Things are in a great Measure owing to it, and as Men could never have known the Immortality of the Soul, without the Assistance of Divinity; so neither would they have been acquainted with

with the History of Man's Redemption, which Knowledg, being so beneficial to Mankind, it is as much more Valuable than the Study of Philosophy, as the Heavens are above the Earth; for what would it profit a Man, *If he should gain the whole World, and lose his own Soul.* But Mr. Boyle, who was so well acquainted with both, knew how to put a just value upon them, and not only in his Writings but in his Life distinguished his Opinion, having a constant regard to that which was of Eternal Consequence, yet without slighting those things which might contribute to that End, and by making a Man the Wiser, and consequently more able to discern the Power, Greatness and Goodness of God. But further, as he shews us the Advantages of the Study of Divinity to induce us to it; so he represents the Danger and Disadvantages of neglecting it. And having fully represented the Motives to the Study of Divinity both in respect of this and another World, he compares the Advantages of the Study of Philosophy, which appear to be in no measure answerable to those which accrue by the Study of Divinity; for as the Knowledg of Natural things is but shallow and uncertain, and continues but for a while, the Knowledg of those things that tend to our Salvation and Eternal Happiness are of Everlasting Concern and Advantage; the Rewards of the one being both uncertain and an Aery Name, which may easily be forgot, and must certainly be so in a little time; whereas the other secures us Felicities and the full Fruition of Celestial Joys, a good Name and happy Abode in Heaven, far exceeding the greatest

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greatest Happiness on Earth. But though the Study of Divinity in respect of it's end, hath the pre-eminence over the Study of Natural Philosophy, as well as other Advantages; yet they may mutually be assistant to one another, and therefore though Divinity is to be preferred, Natural Philosophy is not to be slighted. This Mr. Boyle was an Eminent Example in, being sedulous in the Study of Divinity, and diligent in the Pursuit of Natural Knowledge.

The Excellency of the Mechanical Principles.

To the Book Entituled, *the Excellency of the Study of Divinity*, Mr. Boyle annexes *the Excellency of the Mechanical Principles*, which it seems to be more Philosophical than Divine; yet since he hath placed it amongst his *Physical Theological Works*, we shall consider it in the same place, since it tends not only to recommend the Mechanical Principles as Philosophical, but also as that *Hypothesis* is not repugnant to, but rather helps to account for the *Phænomena* of Nature, without denying God Almighty for the first Cause, which determines the Laws of Motion amongst Natural Bodies, which being once fixed, should act according to his determined Ends, whereas other Systems pretend to Account for things without considering that Almighty Cause which determined the Motion of second Causes, and without which we could not apprehend, how they could first begin to act, or have Matter to act upon. This small Tract or rather Abstract of the Mechanical Principles. Mr. Boyle not only offers Reasons, why it ought to be valued more than other Principles, but also that it compriz

and comprehends all other Principles that are intelligible, those being but subordinate to these Primary ones ; and to that end considers the Principles of other Philosophers, and shews, how far they are agreeable or repugnant to Reason.

Thus far we have given a brief and summary Account of the Honourable Mr. Boyle's Theological Works, so as to represent a faint *Idea* of those Performances; but this is but an Emblem or Superficial Prospect of the Excellency of those Writings; for as in Writing an Account of the History of a Country, there are a great many things and circumstances, which cannot be represented in a Description, nor can the most exact Description give the Reader so clear an *Idea* of it, but that when he comes to Travel that Country, he will find a great many things not taken Notice of, or form a new *Idea* upon Prospect, from what he formed by Description, as a Notion of a Country is more easily formed, than the Land is surveyed and travelled over ; so the Reader must expect to find the Beauty of Mr. Boyle's Writings in perusing his Works, and will have a larger and brighter *Idea* of them than he can expect in so brief an Account, which is little more than the Title is to a Book, and which alone can truly give it's own Character ; for as in the Epitomy of his Works we have reduced and comprized the Sence of the Author in as little Compass as we possibly could, without leaving out any thing useful; so it cannot be expected this small Volum should contain the Sence of the whole ; but only a General view in order

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der to illustrate Mr. Boyle's Character in General.

Having thus given the Reader an *Idea* of his Theological Works, I shall to illustrate his Character further add an Account of his Performances and Progress in Philosophy, Statics, Hydrostatics, Chymistry, Physicks, &c. but since to observe the same Method in those as we have in his Theological Works would be too long, and swell this Volume to too great a Bulk, we shall first give a List of his Writings in General, and then subjoyn a General Account or *Idea* of the Doctrin delivered in those Books, which may be sufficient to acquaint the Reader with the main Scope and Intention, referring him to the Epitomy of his Philosophical Works, published some Years ago, for a fuller Account.

A List of
his Philosophical
Works.

A List of Mr. Boyle's *Philosophical, Statical, Hydrostatical, Physical and Physiological Works*, followeth, viz. New Experiments *Physico-Mechanical* of the Spring and Weight of the Air. A Continuation. A defence of the same. An *Examen* of Hobb's *Dialogues de Natura Aeris*. *Physiological Essays*. The Experimental History of Colours. Considerations of the Usefulness of Experimental Natural Philosophy in three Volumes. An Experimental History of Cold. An *Examen* of Hobb's Doctrin of Cold. Attempts to convey Liquors immediately into the Masses of Blood. Observations and Experiments, and a Description of the Barometer. *Hydrostatical Paradoxes* made out by new Experiments. An Account of an Earthquake, near Oxford, and its Concomitants. The Origin of Forms and Qualities

Qualities illustrated. A way of preserving Birds taken out of the Eggs, and other small *Fetus's*. An Account of a new kind of Baroscope. A new Frigorifick Experiment to produce a considerable Degree of Cold. Tryals proposed to Dr. *Lower*, for the Improvement of Transfusing of Blood out of one live Animal into another. Free Considerations about Subordinate Forms. A Letter to the Author of the Philosophical Transactions, with Experiments of injecting acid Liquors into the Blood. New Experiments concerning the Relation between Light and Air, in shining Air and Fish. A Continuation of the same. An Invention for estimating the Weight of Water in ordinary Ballances and Weights. Certain Philosophical Essays concerning the absolute Rest of Bodies. New Pneumatical Experiments about Respiration, upon Ducks, Vipers, Frogs, &c. and a Continuation. Tracts about the Cosmical Qualities of Things. The Temperature of the Subterranean and Submarine Regions. A Discovery of the admirable Rarefaction of the Air without Heat. An Essay upon the Origin and Vertues of things. Some Observations upon shining Fish, of Veal and Pullets without any sensible Putrefaction. A new Experiment of the Effect of the varying Weight of the *Atmosphere*, upon some Bodies in the Water. Tracts of new Experiments touching the Relation between Flame and Air, Expositions, *Hydrostaticks*. Of the Positive or Relative Levities of Bodies under Water, &c. Essays of the strange Subtlety, great Efficacy and Determinate Nature of Effluvioms. A Letter concerning Ambergrease.

Obser-

Observations about the Saltness of the Sea. A Discourse about the Excellency and Grounds of the Mechanical *Hypothesis*. An Account of the two Sorts of *Helmutian Laudanum*, with the way of preparing it. Tracts of Suspicions about some hidden Qualities of the Air, Celestial Magnets, and *Hobb's Problemata de Vacuo*. A Discourse of the Cause of Attraction by Suction. A Conjecture concerning the Bladders of Air that are found in Fishes. A new Essay Instrument invented by the Author to try the Goodness of Metals. Ten new Experiments about the weakned Spring and some unobserved Effects of the Air. An Experimental Discourse of Quick-silver growing hot with Gold. Experiments, Notes, &c. about the Mechanical Origin or Production of divers particular Qualities, with Reflections on the *Hypothesis* of Acid and Alkali. New Experiments about the Superficial Figures of Fluids, and a Continuation. The Sceptical Chymist, or *Chymico-Physical Paradoxes*. The Aerial *Noctiluca*. The Glacial *Noctiluca*. Memoirs for the Natural History of Human Blood. Experiments about the Porosity of Bodies. Memoirs for the Natural History of Mineral Waters. An Historical Account of a Strange self moving Liquor. The Reconcilableness of Specifick Medicines to the Corpuscular Philosophy. The Great Effects of Languid unheeded Motion. *Medecina Hydrostatica*. *Experimenta & Observationes Physica*. Medicinal Experiments. General Heads for the Natural History of a Country.

Having

Having given a general & the most compleat List, we have met with of Mr. Boyle's Philosophical, Statical Works, &c. we shall in General proceed to subjoyn a General Account of the Aim and Scope of these Works; and for as much as we have formerly, wrote an Epitomy of those Works, we shall here only give a General Idea of them, in the Order and Method, the Subjects are contained in that Epitomy, without observing the Method of this List; the Subjects being there ranged in the same Method in which they might probably have been placed, had they been published altogether. And since the design of mentioning them here is to represent more clearly Mr. Boyle's Character, we shall only represent the General Doctrins contained in that Abstract, refering the Reader to that Epitomy itself for a fuller Account, where Multitudes of Experiments are recited to prove what we here only hint at, and which are as fully delivered as the Subjects might require.

A General Idea of his Philosophical Works, &c.

N. B. Every distinct Section in the Margin denotes an account of a distinct Chapter in the Epitomy.

To proceed then to give a brief Account of his Philosophy, &c. and Idea of the Doctrins contained in those Tracts, First, he informs us, that the Matter of all Natural Bodies is the same, viz. A divisible, impenetrable extended Substance. And since there could be no change in Matter, if all it's Parts were perpetually at rest, to form so great a Variety of Natural Bodies, it was requisite, there should be a Motion variously determined in all the Parts of it, or at the least, some of them; and Matter being divided into Parts by Motion, the Parts divided must have

Section. I.

a peculiar size and shape, and either Rest or Motion; so that Matter being once Created and put into Motion by God Almighty, hath these three primary Affections, Magnitude, Shape and either Rest or Motion.

If then we allow these Primary Affections of Matter, it will follow, that there must be a certain position or scituation of the Parts of Matter thus divided, & the disposition & contrivance of the Parts of the whole, may be called their Texture or Modification, & consequently as that Texture or Modification varies, the Qualities of that Body will be different; for if the Disposition of the Parts of the Body are peculiarly adapted to produce such Effects, the Power to produce them, gives us grounds to say, the Body is endowed with such Qualities in respect of the Bodies it acts on.

As for the Forms of Bodies we may reasonably suppose them, owing to such an Association of Accidents, as is requisite to compose a Body of this or that kind, the Texture of which united, may be called their Form, and that a convention of accidents is capable of performing what is ascribed to a form, appears, since they are sufficient to discriminate it, from all other Species of Bodies.

Nor will it be difficult to explain Generation, Alteration and Corruption by the forementioned Doctrin; for when Accidents thus concur, which are requisite to constitute any Species, new Species are said to be generated, pre-existent Matter acquiring a new kind of Existence or Modification; and when that Essential Modification is dissolved, the Body is said to be corrupted. And as for Putrefaction it is but

a slower kind of Corruption, the Essential Qualities of a Body being only more slowly altered but not destroyed.

This being premised in general, in respect *sect. II.* of the Origin of mixed Bodies, we are to note further, in reference to particular Qualities, that in Compound Bodies they differ much, from the Qualities of the separate Ingredients, so that Qualities may be the Results of Mixture, as well as proceed from the Alterations of Textures, and the Motion of the Parts of the Ingredients.

But the Effects of mixed Bodies, are not always to be considered, as the bare result of the Parts of Matter of a determinate Texture, but as placed amongst other Bodies, on which they may variously act, and be acted on, according to the difference of the Agents and Patients, in respect of their shape, size, posture, order, texture, pores or effluvia, rest or motion; which may enable them to produce a great variety of Effects. We see a strange variety of Sounds are formed only by Musical Instruments; besides a vast number of other Accidents owing to it. But in several Bodies, there are not only Qualities very various in Effects, but even in the same which are homogeneous as to Sense, of which several Instances are produced, in the second Chapter of the Epitomy, V. I. p. 26.

But further, Mr. Boyle having in another *sect. III.* Book, offered several Reasons against the *Aristotelian* Doctrine of Forms, it appears, that the Substantial Forms urged by the Schools, produce not the various Forms of mixed Bodies, but

but that they depend on the various Textures and Modifications of the Compound.

SECT. IV.

And he further shews, that though the Ingredients of a Compound uniting make one Form, yet each Ingredient retains it's peculiar Attributes and Qualities, each having it's proper Form, and though they are subordinate to the general Form of the Composition, yet they are Specifick in respect of the Ingredients they belong to; as each part of a Tree hath it's peculiar Forms, distinct from the Form of the whole, as the Juices and Vertues of the Salt of those Parts differ; and according to the difference of their Essential Textures. And further, he says, that the Faculties and Vertues of Animals and Plants, do not wholly depend on the Forms of mixed Bodies, considered as such, since the Effects of a Compounded Body, may be attributed to the mixed Action of the Compound Ingredients, each of those Bodies cooperating and modifying each others Actions, which is evident, since upon a Dissolution of that Union, each Body hath it's determinate Form and Vertue. Yet sometimes when the Specifick Form of a Body is destroyed, the remaining Qualities may not always result from united subordinate Forms, but depend on the determinate Forms of particular Parts of that Body; and sometimes several new Qualities may be added to a Body; a Specifick Form being destroyed, by the influence of External Agents.

To what hath been said of Subordinate Forms, he adds the following Particulars; First, That

That it is not difficult to determin the Nobleness of Forms. *Secondly*, Though Bodies undergo several Alterations, by the loss or addition of Qualities, yet they have the same Denomination, and have the same Form, by Reason of some eminent Quality or Use. *Thirdly*, Compound Bodies have several Effects, produced by the Union and joynt Action of their Ingredients. *Fourthly*, Sometimes a super-added Form is accidental to a pre-existent, yet it modifies the Operation, without altering it's Nature. *Fifthly*, Besides the Specifick Operations of a Body, in respect of the whole, several of it's Effects may depend on the separate and particular Properties of it's Ingredients. *Sixthly*, The most eminent, and not the presiding, is often called the Specifick Form. *Seventhly*, Those Forms which are generally called Subordinate, may more reasonably be called Concurrent, the Form of the whole depending on their Coalition.

He further shews, that a slight variation of Texture, produced by Motion, may discriminate Natural Bodies, and qualify them to produce different Effects; as Ice and Salt will freeze other Liquors, though Water and Salt will not. He further shews, that the Productions of Art, are really the Effects of Nature, the Artist only putting Natural Bodies together, whilst their Effects are produced according to Natural Laws.

Mr. Boyle further shews us, that the curious and various Figures of Salts, may be produced without a plastick Power, resulting from a bare Connection of Metalline and Saline Bodies, and their

their Figures may vary according to the different Quantities of Liquors, or the space of Time they shoot in. And he further says, that Acids shoot into Chrystals variously figured, as the Nature of the *Menstruum* differs, or the Bodies it works upon; and that Salts may be obtained by slight alterations, without the assistance of Substantial Forms, which he proves by several Experiments mentioned in that Treatise.

sect. VII,
VIII, IX.

And by several Experiments, he further makes it appear, agreeable to what hath been delivered, that by alteration of Texture, and a new Modification of Matter, several changes may be wrought in Matter, without the help of Substantial Forms; from which Experiments, he likewise draws several Inferences, to shew the Absurdity of the *Aristotelian* Principles.

sect. X.

He likewise produces several Experiments, to prove that by altering the Texture of Bodies, several Qualities may be destroyed, and regained again, especially in *Salt-Petre*. As also, that the same Parts of Matter, may produce different Effects, in a fluid, from what they have in a solid Form. And in the same Tract, he makes it appear, that Chymistry rather destroys, than discovers, the Principles of Natural Bodies.

sect. XI.

Mr. *Boyle* further informs us, in his History of Fluidity, that a Body is said to be fluid, as it consists of Parts, which easily slip upon one another's Superficies, which they are the more easily disposed to, by their porous Interstices; the Motion of their Parts likewise, occasioning them to spread and diffuse themselves every way,

may, till some solid Body opposes them, to whose Superficies they adapt themselves. And he further informs us in the same Tract, that to render a Body fluid, it's Parts ought to be minute, and of a determinate Figure; likewise, that there should be Pores betwixt their Parts, which ought to be in a perpetual and variously determined Motion. He also informs us, how a consistent Body, may be rendered fluid, and having illustrated the Doctrin of Fluidity, by Experience, he further shews, that the Reason why some Fluids will not mix with others, is their particular Textures, and the peculiar Motion of their Parts.

Hellkewise makes it evident, that the Superficies of Liquids, pressing one against another, give each other different and determinate Figures.

SECT. XII.
XIII.

In the History of Firmness, he informs us, That Solidity consists in this, that the gross Parts are interwoven together; so that they are unapt to diffuse themselves several ways, as the Parts of Fluids do, and that the Figure of their Superficies depends on the Connection of the Parts that compose them, rather than External Bodies; so that there seems to be three Causes of Solidity, Grossness of Parts, Rest, and the Implication of their Constituents.

He further likewise shews us, that a Juxtaposition of Parts is not the only Cause of Cohesion, but that the Spring and Weight of the Air is one great Cause, though a Juxtaposition of the Parts of Glass, seems requisite and sufficient to make such a compact Substance, the Parts of Matter that compose it, being first minutely

nutely divided, by the Fire before their Union. And he further tells us, that both the Figures and Textures of the Parts of a Body, may not only contribute to their Solidity, but that the Interposition of the minute Parts of another Body, may render some Liquids solid, and that the addition of a Powder only may make a Liquor solid. And he further tells us, that Fluids consist not of Parts divisible into fluid, as quantity into quantity; and that there is a plaitick Power inherent in several Bodies, and that mixture is sufficient to produce Putrefaction.

SECT. XIV.

Mr. Boyle further informs us, which he proves by several Instances, that there is a Motion, even in the Parts of consistent and solid Bodies.

SECT. XV.

Treating of the great Effects of unheeded and languid Motion, he proves by several Instances and Observations, *First*, The great Efficacy of Celerity in Bodies very small, especially when the space they move through is but very small, as in Lightning. *Secondly*, That the Insensible Motion of so soft Bodies as Fluids, may have a sensible Effect upon solid Bodies, as in Sounds, when they shake the Windows of a House, &c. at a considerable distance. *Thirdly*, The Number of the Insensible Parts of Matter put into Motion, enables them to perform several things. *Fourthly*, That Local Motion may be propagated through several Mediums, and even solid Bodies. *Fifthly*, The Effects of particular Modifications, of the invisible Motions of Fluids, on Animal Bodies disposed to be worked upon by them are very considerable. Thus a particular Note of a Musical Instrument, hath a peculiar Effect upon particular

particular Animals. *Sixthly*, The Effect of Fluids upon inanimate Bodies, by a particular Texture and Modification of the Agent and the Patient, are also considerable. *Seventhly*, Some Bodies are thought to have their Parts absolutely at rest, when they are only in a state of Tension or Compression. *Eighthly*, We are too apt to take Notice of the visible Effects of Bodies on one another, without considering the Intestin Motion of their Parts.

Thus far we have given a brief Scheme of the Doctrin proposed and contained in the Books abridged, in the first Book of the Epitomy of Mr. Boyle's Philosophical Works, we shall next proceed to a short *Idea* of what is contained in the Subjects abridged in the second Book of that Epitomy.

And *first*, Treating of the Cosmical Qualities of Things, he informs us, that they depend partly on the Influence of External Agents, as well as the primary Affections of Matter, so that some Bodies are altogether inactive, till acted on; and others are put into Action, chiefly by the Influence of catholick and unheeded Agents. *Secondly*, There are several Bodies, which, when put into Action, are subtle enough to insinuate themselves into the Pores of other Bodies, which they are forced to act on, by the established Laws of Nature, which appears in the expansive force of Beans, soaked with Water. *Thirdly*, An alteration of the Mechanical Texture of a Body, is sufficient to dispose it, or make it unapt to be worked upon by those unheeded Agents,

Sect. I.

Sect. II.

In the next Chapter, the following Suspitions or Conjectures are proposed. *First*, That the *Aether* contains several Parts of Matter, which are variously disposed to work upon Bodies, as the Textures of those Bodies differ, which they chance to work upon, or according to the difference of the Agents, which work concurrently with them. *Secondly*, He informs us, that several People have discovered Pestilential Steams in the Air, before they acted as such upon other Bodies. *Thirdly*, He suspects, that considerable Changes in the Internal Parts of the Earth, may occasion a variation of the Mariners Needle. *Fourthly*, He supposes the ebbing and flowing of the Sea and such like *Phænomena*, to be occasioned by some Cosmical Law of Nature, or that the Planetary Vortex may not be a little concerned in producing such Effects. *Fifthly*, He supposes all Endemical and Epidemical Distempers, chiefly to depend on the Influence of those Globes, that move about us, and the Terrestrial Effluvia of our own Globe.

Sect. III.

Treating of the Temperature of Subterraneous Regions, Mr. Boyle, as to heat and cold, divides them into three Regions, and informs us, that the Bounds as well as Temperature of the first are very different. That the Temperature of the second seems to be colder than that above, or that below it, being remoter both from the Influence of External and Subterraneous Heat, and that in several places that may be refered to in this middle Region, the Temperature of the Air is different, at the same Seasons of the Year; and further, the different

different Temper of subterraneous Regions, may be varied by the Soil. And he further adds, that the Temperature of the third Region is warm, which Warmth varies in several Places.

As to the Sea, Mr. Boyle only assigns two Regions, the one extended from the Superficies of the Water, as far as the Sun Beams penetrate; and the other, from thence to the Bottom. So that the upper Region must vary as to it's Extent; according to the difference of the Climate, and the Heat of the Sun, or the Nature of the Soils about the shoar; as for the Lower Region it is generally Cold. *Seff. IV.*

He further tells us, that the Bottom of the Sea is very rough and unequal, and that the Water gravitates considerably upon Bodies immersed in it, and that the bottom of the Sea is not disturbed with Storms, but that the Water almost Stagnates. *Seff. V.*

He tells us further, that Coral when first taken up, is soft, flexible, and very pale; but when the bark is taken off, and it is exposed to the Air, it presently appears red; it is much paler on the Inside, than on the External Superficies. He likewise tells us, that several Trees in Africa are observed to grow under Water. *Seff. VI.*

Mr. Boyle likewise informs us, that the Proportion of Salt to Water in Sea Water, is as one to forty; and that the Salt is supplied by Salt Rocks contiguous, or near the Water, or by Salt washed away by Springs and Rain Water, which float into the Ocean, or by latent Springs. The bitterness commonly observed in Sea Water, he supposes to proceed from some Bituminous Bodies. *Seff. VII.*

dies carried along with Spring Water into the Sea. To which Observations he adds, that Agitation is requisite to keep Sea Water from stinking, and as to it's Saltness it is observed, to differ much in it's Degrees.

Sec. VIII. The Eighth, Ninth, Tenth and Eleventh Chapters of the Second Book, chiefly contain Queries for the Natural History of Mineral Waters, in trying of which he gives the following Directions. *First*, to observe the Changes of the Colours made by Tinctures, in a Good Light, to distinguish what Mineral Tinctures they are impregnated with. *Secondly*, He advises us to vary the Shades of Colours made by Mineral Waters, either by dropping such Waters upon Paper, whose Pores are saturated with Powder of Vitriol, or tinged with a Decoction of Logwood. Several Variations of Colours may also be made by dropping, either Medicinal Liquors into Mineral Waters, or an Infusion of Galls either before or after. *Thirdly*, he recommends for such Experiments, the Astringent Parts of Plants, or Animal, or especially Mineral Substances.

Sec. IX. In the Twelfth Chapter he tells us, that the Natural State of Bodies varies according to the difference of Climates; so that in some Parts and Seasons, Water in a Natural State is Froze, and turned into Ice, and in others it is always Fluid. To which he adds, that all violent States of Matter are not preternatural, it being a common Error, that nothing violent is durable, the Atmosphere we live in being always in a forced or compressed State.

In the Thirteenth Chapter, Mr. Boyle's Pneumatick Engin is described, and several Experiments tryed with it; which shew, that the Air acts upon most Bodies by Virtue of it's Springiness, which inclines it always to expand; and by it's Weight; so that it gravitates on Bodies below it, according to the weight of the incumbent Pillar of the Air. And by this Weight it raises Mercury, in Weather Glasses, and Water in Pumps. And by several Experiments made in an exhausted Receiver, it is evident, that though Gun-Powder will not explode without the Pressure of Air upon it, nor will fire burn; yet a Loadstone externally applied to an exhausted Receiver, will have considerable Effects on Bodies contained in it, but Sounds are not propagated in *Vacuo*. And he further shews, that two flat polished Marbles will adhere to one another by the help of the Compressure of the Atmosphere. And that the Weight of the Atmosphere was able to raise a hundred Pound Weight tyed to the sucker of a Pump, depressed when the Receiver was exhausted. To which Experiments he adds, others which shew, that Filtration is caused chiefly by the Pressure of the Atmosphere; and that the Proportion betwixt the Weight of Air and Water is as 1 to 338, and that the Proportion of Quick-silver is as 14000 to 1. He likewise made several Experiments and Observations, to find what Effects the exhausted Receiver had on Animals included in it, and how long they could live without Air.

sect. XI. In the Fourteenth, Fifteenth, Sixteenth and Seventeenth Chapters, he continues a Defence of what hath been delivered in the Preceding, and Objections against the Erroneous Opinions of others, which is continued to the Nineteenth.

sect. XII. In the Nineteenth Chapter he hath described an Instrument with which several Experiments were tryed, which shew, that the spring of the air alone is able to raise Mercury in a Tube, and that Attrition only in an exhausted Receiver is able to produce Heat. And further, that the Spring of the Air is able to burst bladders, and to raise a considerable Weight. And further, that Mercury can be raised by Suction no higher than the Weight of the *Atmosphere* is able to impel it, and he shews likewise to what height Mercury & Water may be raised proportionably to their specifick Gravity. He further shews, how to discern the Weight of the *Atmosphere* by the Touch, and how to make portable *Barometers*, and that in an Exhausted Receiver a spring may be raised without any Difficulty, yet when the Air is let in, it will be violently depressed again, and not so easily be raised again. He shews also, that the Pressure of the Air makes Cupping Glasses Stick. To which he adds; a great many more Experiments worthy our Curiosity to enquire after.

sect. I. The First Chapter of the Second Volum of the Epitomy of Mr. Boyle's Philosophical Works contains several Experiments to evince further the weight and spring of the Air, whence it appears, that the ascent of water in Syringes depends on the Pressure of the Air, and that light may be produced in *Vacuo Boyliano*, and that by

by a small Quantity of included Air in an exhausted Receiver, 50 or 60 pounds, or a greater weight may be raised.

The Second Chapter contains Descriptions of several Engins employed in succeeding Experiments. Sect. II.

In the Third Chapter, it appears, that Air may be produced several ways, as from Bread, Grapes, Plants, Mustard, boiled Apples, &c. He also informs us, how the Production of Air may be obstructed, as by Cold, by the Use of Spirit of Wine along with the Body included in *Vacuo*; or by employing Vinegar, by compression, by Water or Leaven; and he further shews us, that Artificial hath different Effects from common Air; also, that Air compressed varies in it's Effects from those of common Air. That Animals cannot live in Artificial Air, and that the Condensation of the Air promotes the Consumption of combustible Matter. Also that Air is produced from dried Fruits without any Regularity; That Bodies yield as much Air as they can, before Putrefaction; That Artificial Air may be destroyed; That Liquors may become sower without an Evaporation of Spirits; That fermented Liquors may preserve Fruit; That Beef may be preserved in Beer. And tho' Fishes afford not so much Air as Flesh; yet they will corrupt, though not affected by the outward Air. That Butter may be preserved a long time, if not exposed to External Air, and that Sugar does not preserve Fruit as well as fermented Liquors; and that Flesh may be kept fresh, if kept in a Receiver in a strong compressed Air. Sect. III.

- Sett.* IV. He further shews, that Bodies may be preserved a long time in *Vacuo Boyliano*, without boiling.
- Sett.* V. In the Fifth Chapter, he makes it appear, that Air may be unfit for Respiration, though it retains it's usual Pressure. He also shews us by several Experiments, that some sort of Animals will live much longer without Air than others.
- Sett.* VI. In the Sixth Chapter he makes Animadversions on Mr. *Hobb's Problemata de Vacuo*, and shews, that the *Atmosphere* is the chief Cause of the Ascent of Water upon Suction.
- Sett.* VII. In the Seventh, he shews, the Cause of Attraction by Suction, shewing, that it depends chiefly on the External Pressure of the *Atmosphere*, when the Pressure of it is taken off the Internal Surface in the Tube. And that Water may be raised by Suction, when neither the Weight nor Spring of the Air occasions it's Elevation; and *Secondly*, that the Weight of the *Atmosphere* is sufficient to raise up Liquors by Suction.
- Sett.* VIII. In the Eighth Chapter, he makes Observations and gives Directions about the *Barometer*. And the Ninth contains a Description of a new *Barescope*.
- Sett.* IX. In the Tenth he shews, the admirable Rarefaction of the Air, without Heat; so that it possesses 8232 times it's former Dimensions & sometimes 10000.
- Sett.* X. The Eleventh, Twelfth and Thirteenth Chapters teach us, that the Duration of the Spring of Expanded Air is very considerable, and that the Air may be compressed into an
- Eighth

Eighth Part of it's former Demensions, and that the Proportion in respect of the Degrees of Rarefaction and Condensation is, as, 1 to 70.

The Fourteenth Chapter shews us, the Use *sect. XI.* of *Hygrascopes*; and informs us, that the General use is to shew the Changes of Air, as to moisture & dryness, and the particular Use is to shew the Variations of Weather, the same Month, Day and Hour. To inform us, how much one season is dryer than another, and to shew how the Temper of the Air is altered by Winds strong or weak, Frost, Snow or other Weather. Also they help to compare the different Temper of Houses and different Rooms in the same House. They also shew in a Chamber, the Effects of the presence or absence of Fire in a Chimney or Stow, and direct us, how to keep a Chamber in the same or any assigned Degree of Dryness.

The Eighteenth Chapter shews, the Efficacy *sect. XII.* of the Airs Moisture in contracting Ropes, swelling of Timber, and bursting of Marcasites.

In the Nineteenth Chapter, he gives us an *sect. XIII.* Account of some unheeded Causes of the Insalubrity or Salubrity of the Air, comprized under the following Propositions. *First*, That it is probable, that in several Places the Salubrity or Insalubrity of the Air in general, may in a great measure, depend on Subterranean Expirations, especially ordinary Emissions. *Secondly*, It is not improbable, that in several places Endemical Distempers chiefly, or partly depend on Subterraneous steams. *Thirdly*, that probably

Epidemical Distempers are in a great measure occasioned by Subterraneous *Effluvia*. *Fourthly*, It is likely that most Diseases called new ones, chiefly or concurrently depend on subterraneous *Effluvia*.

- Sett. XIV.* In the Twentieth and Twenty first Chapters, he shews, that the Air hath several Latent Qualities, occasioned by the Union and Conjunction of other Bodies with it, some of which may be raised by the Sun Beams, also he says, that the Air seems to contain all manner of Seminal Principles.
- Sett. XV.* In the Twenty Second Chapter, he endeavours to improve Artificial Magnets. And in the Twenty Third and Fourth Chapters, he shews, that Magnetical Qualities depend on the Mechanical Construction of the constituent Parts of a Body, since the Effects of Fire will alter that Quality, and other concurring Accidents, which can only produce Mechanical Effects.
- Sett. XVI.* The Twenty Fifth Chapter shews by several Experiments, that Electricity may be produced or destroyed Mechanically.
- Sett. XVII.* The Twenty Sixth Chapter contains a General History of the Air, which being only Historical, we shall refer the Reader to it.
- Sett. I.* In the Fourth Book of the Epitomy of Mr. Boyle's Philosophical Work, he shews, that Tastes may be Mechanically produced.
- Sett. II.* The Second and Third Chapters shew, that Odours and Colours depend on a Mechanical Texture of the Bodies endowed with such Qualities.

He further gives us an Experimental History *Sec. III.* of Colours, which shews, that Diversity of Colours, frequently imply different Properties in Bodies, and that the Perception of Colours, depends on a particular Motion given to the Spirits in the Retina, and communicated to the Brain. As for the Cause of Colours, he assigns it, to the variously and differently modified Superficies of Bodies, or the different superficial Parts, and their situation; and sometimes the Motion of a Body, which enables it to reflect the Rays of Light differently to the Eye.

And as to particular Colours, in the fifth Chapter we are informed, that whiteness depends on such a superficial Texture, as reflects the Rays of Light not upon another, but upon the Eye, reflecting them without Refraction; and he further tells us, that the Surfaces of white Bodies are specular, and that by changing the Texture of the Parts of that Body, it may be deprived of that Colour. Blackness he says, differs from White, where the Rays of Light are reflected inwards, and not upon the Eye, the Protuberant Parts yielding to the Impression of those Lucid Rays. The sixth and seventh Chapters contain several Experiments, which shew, that both Black and White may be mechanically produced and destroyed.

In the first Chapter of the Appendix to the *Sec. I.* fourth Book of the Epitomy of Mr. Boyle's Works, we are told, that Cold may be mechanically produced or destroyed, by a bare Change of Texture, or other Mechanical Alterations, without supposing the *Aristotelian* Substantial

Substantial Forms, or the Hypostatical Principles of the Chymists.

sect. II.

And that not only Weather-Glasses, but our Senses, may give us so much Information about Cold, by several Predispositions, and the Temper of our Sensories; thus we find it colder in the Air, coming out of a hot Bath, than when only out of a warm Room, &c.

sect. III.

He also communicates his Observations about the Deficiencies of Weather-Glasses, &c. teaching us how we may learn to improve the Use of them.

sect. IV.

He further informs us, that the Cause of the Condensation of the Air in Weather-Glasses, and the Ascent of Water by Cold, are occasioned by the Pressure of External Air upon the Surface of the Water without the Pipe, and overpowering the Internal Spring of the Air weakened by Cold.

sect. V.

The fifth Chapter contains a Natural History of Cold, which being Historical, we shall refer the Reader to the Epitomy.

sect. VI.

In the sixth Chapter, he refutes the received Notion of *Antiperistasis*; and in the seventh examines Mr. Hobbs's Doctrin of Cold; the ninth and tenth Chapters only contain Historical Truths, for which we refer the Reader to the Epitomy, which admitting of no Recapitulation, we pass it by.

sect. VII.

In the Tenth Chapter, he tells us, that Cold is a privative Quality, depending on a Privation of the Motion of the Parts of a Body cooled.

He

He further shews, the great expansive Force *Seff. VIII.* of Freezing Water, being able when froze in a Brass Cylinder, to raise 254 pounds, though the Cylinder was none of the largest. And he further tells us, that a cold Ebullition, or Effervescence depends purely on the Texture of the fermenting Liquor.

In the twelfth Chapter, he communicates *Seff. IX.* several Experiments, which evince, that heat is occasioned by, and depends on, a variously determined and rapid Motion of the minute Parts of the Body esteemed hot.

And in the next, he gives an Account of a *Seff. X.* particular sort of Mercury, which grows hot with Gold.

He further makes it appear by several Experiments, that the Particles of Fire may be detained in Metal, and thus add to the weight of it, the next Chapter being full of Experiments to the same purpose.

He in the next place shews, the Perviousness of Glass, to ponderable Parts of Flame, and makes it appear, that flame may act as a Menstruum, and make Coalitions with the Bodies it acts upon. *Seff. XII.*

And he further communicates Experiments, *Seff. XIII.* shewing the Relation betwixt Flame and Air, and how difficult it is to produce Flame without Air, and impossible to preserve it.

He likewise communicates Experiments, *Seff. XIV.* shewing the Relation betwixt the Air and the *Flamma Vitalis* of Animals, making it appear, that it is as impossible to preserve Animals without Air, as Flame.

In

- Sett.* XV. In the three succeeding Chapters, he lays down Experiments to shew, that shining Flesh and Fish, as well as Worms, lose their lucidness, if deprived of the contract of the Air.
- Sett.* XVI. The twenty third Chapter consists of Experiments made with a Diamond, which shone in the dark.
- Sett.* XVII. The two last Chapters give an Account of an Aerial and an Icy *Noctiluca*, their Lucidness depending on Fumes raised by the saline Parts of the Air, which united with the Air, affect the Eye joyntly.
- Sett.* I. The five first Chapters of the fifth Book, Part the first, prove, that Bodies have only a Relative Levity under Water, and that the Air affects such Bodies, according to the different Weight of the *Atmosphere*. He likewise communicates an Invention, for estimating the Weight of Water in Water.
- Sett.* II. In the next place, he proves the following Hydrostatical Paradoxes by several Experiments. I. That in Water and other Fluids, the lower Parts are pressed by the upper. II. That a lighter Fluid may weigh upon a heavier. III. That if a Body contiguous to the Water, be altogether, or partly lower, than the level of the said Water, the lower part of the said Body will be pressed upwards by the Water that touches it beneath. IV. That in the ascent of Water in Pumps, &c. there needs nothing to raise the Water, but a competent weight of an External Fluid. V. That the Pressure of an External Fluid, is able to keep an Heterogenous Liquor suspended at the same height in several Pipes, though of different Diameters; VI.

VI. If a Body be placed under Water, it's uppermost Surface, being paralel to the Horizon, let never so much Water be on this or that side the Body, the direct pressure sustained by the Body, is no more than that of a Column of Water, having the Horizontal Superficies of the Body for it's Basis, and the perpendicular depth of the Water for it's height. And so likewise, if the Water that presses upon the Body, be continued in Pipes, open at both ends, the pressure of the Water is to be estimated by the weight of a Pillar of Water, whose Basis is equal to the lower Orifice of the Pipe, and it's height equal to a perpendicular, extending thence to the top of the Water, tho' the Pipe be much inclined towards the Horizon, or though it be irregularly shaped, and broader in some Parts than the said Orifice.

VII. A Body immersed in a Fluid, sustains a lateral Pressure from the Fluid, which increases as the depth of the immersed Body increases below the Surface of the Fluid.

VIII. Water may be made to depress a Body lighter than it self, as well as to buoy it up.

IX. Oyl lighter than Water, may be kept in Water without ascending.

X. The Cause of the ascent of Water in Syphons, and of flowing through them, may be explained, without having recourse to Natures abhorrency of a *Vacuum*.

XI. One of the most solid Bodies, or most ponderous, tho' near the top of the Water, will sink by it's own weight, yet if it be placed at a greater depth, than twenty times it's own thickness, it will not sink, if it's descent be not assisted by the weight of incumbent Water.

In

Seff. III. In the eighth Chapter, a new Hydrostatical Instrument is described, to estimate the difference of Metals in goodness.

Seff. IV. In the ninth Chapter, he gives a short Account of the increase and growth of Metals. In the rest of the Chapters of the first Part of the fifth Book of the Epitomy, he proposes a Method to estimate the goodness of ours, and also of Medicinal Substances; whence it appears, that if a Body be heavier than Chrystal, it must contain more or less of a Metalline Ingredient, as it exceeds that in weight.

Seff. I. The second Part of the fifth Book, contains several Observations and Experiments, both Chymical, Medicinal and Physical, which since they contain nothing but hath been before taught, and can be represented in no less Room, than in the Epitomy, we shall refer the Reader thither.

Seff. II. The two first Chapters of the third Part of the fifth Book of the Epitomy, shew, that all Gems have once been in a fluid Form, and owe both their Colours and Vertues to Mineral Tinctures.

He next shews, that even solid Bodies emit Effluvia.

Seff. III. The fourth Chapter represents, the strange subtilty of *Effluvia*, a grain of Silver Wire consisting of 64800 metalline Parts; and a grain of Leaf Gold being divisible into 2000000. Squares. And Filings of Copper will give a Tincture to 613620 times their Bulk of Water.

In the fifth Chapter he represents, the great *sess. IV.*
Efficacy of *Effluvioms*, as in Lightning, and
other *Effluvia*, which affect Human Bodies.

Next he shews, that the *Effluvioms* of Bodies *sess. V.*
act according to the determinate Nature of the
Body they are emitted from.

And in the seventh and eighth Chapters, he *sess. VI.*
represents, that not only Animal, but other
solid Bodies are porous.

The two next Chapters, contain a Natural *sess. VII.*
History of Human Blood, the Contents of
which, not admitting of a Recapitulation in
much less room than the Epitomy, I must re-
fer the Reader thither for an *Idea* of them.

The last Chapter of the third Volum of the *sess. VIII.*
Epitomy, represents, that the Operations of
Specifick Medicines, are reconcileable to the
Corpuscular Philosophy. What he says as to the
Manner of their acting, may be comprised un-
der the following Propositions.

Prop. I. Sometimes a specifick Medicine may
cure, by dissolving or resolving the Morbifick
Matter, and by that means disposing it for Ex-
pulsion, by the greater Emunctories of the Body,
and the Pores of the Skin.

Prop. II. Sometimes a Specifick may over-
power the too Acid, or other immoderate Par-
ticles that infect the Mass of Blood, and destroy
their coagulatory, or other Effects.

Prop. III. Sometimes a Specifick Medicine,
may be serviceable to a Patient, by precipita-
ting the Morbifick Matter out of the Mass of
Blood, or the other Liquors of the Body in
which it harbours.

Prop.

Prop. IV. Sometimes a Specifick Medicine may work by peculiarly strengthening and cherishing the Heart, the part affected, or both.

Prop. V. Sometimes a Specifick Medicine may operate, by producing in the Mass of Blood a disposition, by correcting, expelling, or any other fit ways, to surmount the Morbifick Matter, or other cause of the Distemper.

Prop. VI. Sometimes a Specifick Medicine may unite with the Morbifick Matter, and form a *quid Tertium*, less offensive to the Body, tho' not so easily expelled.

Set. IX.

The first Chapter of the fourth Volum, encourages the Use of simple Medicines. *First*, Because we may more easily foresee their Effects, than the Effects of a Composition; and therefore safer. *Secondly*, A good Medicine may be taken in a greater Quantity without being offensive; and *Thirdly*, since by that means the Effects of the *Materia Medica* may be sooner brought to a Certainty. The second Chapter contains, Historical Observations about *Vitiated Sight*.

Set. I.

The first Chapter of the fifth Book contains Mr. Boyle's Chymical Works, which shew, that Chymical Principles are transmutable; and that a Substance esteemed Homogenous, and a Chymical Principle, may yield very different Principles, if acted on by Fire; and that Fire is not the true and genuin Anolizer of Bodies, since it does not separate the Principles of a Body, but variously compounds and alters the Texture of a Body it acts upon. And he further makes it appear, that the Bodies drawn from Substances exposed to the Fire, were not pre-existent

pre-existent in those Bodies, in the same Form.

The Second Chapter shews, the Insufficiency *sect. II.* of the *Chymical* and *Aristotelian* Arguments in favour of their Doctrin; and the remaining Part of the fifth Book in General evinceth, that Chymical Principles are producible, and depend on a Mechanical Structure and Texture of Parts; and that the different Substances into which Bodies are divisible by Fire are not of a pure Elementary Nature; nor is their number exactly either 3 or 5. And *Lastly*, that there are several Qualities which cannot be refered to any of these Substances.

In one of the Chapters belonging to the *sect. III.* Fourth Part of the Fifth Book, he confutes the Doctrin of *Acid* and *Alkali*, shewing the Insufficiency of it.

The Sixth Book, which concludes the *Epitome* *sect. IV.* consists of an Abstract of some of his *Physiological Essays* of the *Usefulness* of Experimental Philosophy, of which we can give no shorter Account than is there contained.

Thus far we have given a brief and general Idea of Mr. Boyle's Writings, both *Theological* and *Philosophical*, &c. which are large Instances, not only of his Wisdom, but also of the vast Extent of his Knowledg. His great Knowledg in Divinity, was that true Wisdom, which *Solomon* so much prized, and which Mr. Boyle so much valued, and as that secured him Everlasting Happiness in a future State; so the other Part of his Knowledg hath acquired him a perpetual Fame on Earth, which will continue as long as the World endures. But the

small hints we have here given of them, are but slender Specimens of what his Writings are Noble and Valuable Monuments; for what we have here said is but like small Shreds or Patterns of Cloath, which though they may represent in some Measure, the value of the rest, yet they appear not with so much Beauty as in the whole Piece; nevertheless they will in Part contribute to enlarge the *Idea* we would form of so worthy a Promoter and Encourager of Learning and Knowledg, and these Samples of the Doctrin and Subjects he so diligently cultivated and so much improved, will give us a faint view of those Thoughts which ranged so far through the Labarinths of Knowledge, & soared out of the sight of common Capacities; for, from hence it appears, that he not only discovered the Minute Ingredients of which grosser Bodies are formed, but traced the whole Chain of Second Causes, from the most obvious to the most secret, and even to the Primary and Omnipotent Cause of all Things. He was not content with the Historical Knowledg of the Superficial shell and covering of the Earth; but penetrated as far as possible into the most internal and deepest recesses both of Sea and Land, endeavouring both to know Things and their Natures. He was intimately acquainted with the circumabient Parts of the Earth, and with all the Properties and Accidents of the *Atmosphere*, from the Superficies of our Globe to the utmost bounds of our Vortex. Nor could he confine his Thoughts to the Narrow Limits of one World, but enlarged and extended his Knowledg to the Spheres above,

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making himself Master of all valuable Arts and Sciences worthy his Curiosity.

And as his Writings are Testimonies of his Knowledg; so likewise they are Witnesses of his Indefatigable Industry; and as one would think it impossible for one Man to make so many Discoveries and Improvements in the Term of his Life; so it is as much to be admired, how he should be able to prosecute so many Studies, and withal make so many Observations and try so many Experiments, as are dispersed through, and every where adorn, his Books; these we can only mention here; since they are only to be justly admired by those that peruse his Works; of which we have formerly wrote an Epitomy, containing all the Substance of his Writings, only cleared from unnecessary Circumstances and Circumlocutions, which made them long and tedious to some Readers.

Having thus given a brief Account of Mr. Boyle's Writings which are Famous all the World over; we might reasonably step towards the Conclusion of a Life, that by the Multitude of Good Works done in it, might probably have an end, since one that knew not how long he lived, and viewed his Works, would think his Life already prolonged much above the common Age of Men; since he hath done the Work of a much greater Number of Years; yet before we can come to the Period of his Noble Course, there is something yet which we must take notice of.

*Fragments
and small
Specimens
of his Cu-
riosity.*

The Fame of his Writings had not only gained him Universal Applause, but general Acquaintance; and every one that was curious, coveted and thought it an Honour to be acquainted, and a much greater to hold Correspondence at a distance with a Man so eminent and universally Learned; every one was fond of Communicating what they could, and thought it an Honour to have the Liberty to make their Offerings at his Altar; nor was he less free in Communicating to the World whatever Improvements he made, or whatever he thought might be serviceable to Mankind, or entertaining to the Curious, whether it were small Fragments of his own Curiosity, or such as were handed to him from others, which he readily Communicated to the Royal Society.

Since then, there are several Fragments either of his own, or those which he received from others, and thought fit to communicate to the World, interspersed through the Transactions and which are not taken Notice of in his Works. I hope the Reader will not think it amiss, if after an Account of his more noted Works and Writings, which afford the World so Noble an Entertainment, and employed a great Part of his Life; we gather together these loose Fragments, which employed and helped to fill up some small Intervals; nor may it be improper to take Notice of such Things in an Account of his Life, which he thought worthy to take up Part of his Life whilst on Earth.

And since these Fragments have little or no Relation to one another; we shall not give our selves the Trouble to put them in any other Method or Order than what they were published in.

The first we shall begin with, is an Observation imparted to Mr. Boyle by Mr. David Thomas, with an Account of a very odd Monsterous Calf. The Account is as followeth. A Butcher having caused a Cow (which cast her Calf the Year before) to be covered ; that she might the sooner be fatted, killed her when Fat, and opening the Womb which he found heavy to admiration, saw in it a Calf, which had begun to have hair, whose hinder Legs had no Joynts, and whose Tongue was *Cerberus* like, triple, on each side of his Mouth one, and one in the midst; betwixt the fore-Legs, and the hinder Legs was a great Stone, on which the Calf rid ; the *Sternum* or that part of the Breast where the Ribs lye, was also perfectly Stone, and the Stone on which it rid, weighed twenty Pound and a half ; the outside of the Stone was of a greenish Colour, but some Parts of it being broken off, it appear'd a perfect Free-stone. To which Account he adds, an Observation touching some Particulars further considerable. Says he, upon the strictest Enquiry, I find by one, that saw the Monster Calf and Stone, within four hours after it was cut out of the Cows Belly, that the Breast of the Calf was not stony, but that the skin of the Breast, and between the Legs, and of the Neck (which Parts lay on the smaller end of the Stone) was very much thicker, than on any other Part, and that the Feet

*An Account
of a Monsterous Calf.*

of the Calf were so parted as to be like the Claws of a Dog. The stone I have since seen, it is bigger at the one end than the other ; of no plain Superficies, but full of little Cavities. The stone when broken is full of small Pebble stones, of an oval Figure ; it's Colour is grey like Free-stone ; but intermixed with Veins of Yellow and Black.

*Milk in
Veins in-
stead of
Blood in the
Aspera
Arteria.*

The next thing, that comes in our way is, some Anatomical Observations of Milk found in Veins, instead of Blood, and of Grass found in the Wind Pipes of Animals. A Curious Person wrote not long since from *Paris*, that there they had, in the House of a Physitian newly opened a Man's Vein, wherein they found Milk instead of Blood. This being imparted to Mr. *Boyle* at *Oxford*, his Answer was ; That the like Observation about white Blood, had been made by a Learned Physitian of his acquaintance, and the thing being by him looked upon as remarkable, he was desirous to have it very circumstantially from the said Physitian himself, before he would say more of it.

The other Particulars, says the Author of the Transactions, mentioned in the Title of this Head, came in a Letter sent also by Mr. *Boyle* in these Words, I shall acquaint you, that two very Ingenious Men, Dr. *Clark* and Dr. *Lower* were pleased to give me an account of pretty odd kind of Observations. One of them assuring me, that he had several times, in the Lungs of Sheep, found a Considerable Quantity of Grass, in the very Stanches of the *Aspera Arteria* ; and the other relating to me, that a few

Weeks

Weeks since, he and a couple of Physicians, were invited to look upon an Ox, that had for two or three days, almost continually held his neck streight up, and was dead of a Disease, the Owner could not conjecture at: whereupon the Parts belonging to the Neck and Throat, being opened, they found to their Wonder, the *Aspera Arteria* in it's very Trunk, all stuffed with Grass, as if it had been thrust there by main force, which gives a just Cause of Marvelling and Enquiry, both how such a Quantity of Grass should get in there, and how being there such an Animal could live with it so long.

In another of the Philosophical Transactions Mr. Boyle gives a further Account of an Observation about white Blood, which is this, I have at length according to your desire received from the Ingenious Dr. Lower, an Account in Writing of the Observations about Chyle found in the Blood; which though you may think strange, agrees well with some Experiments of his and mine, not now to be mentioned. The Relation though short comprizing the main Particulars of what he had more fully told me in Discourse, I shall give you with little or no Variation from his own Words.

A Maid after Eating a good Breakfast about seven in the Morning, was let Blood about eleven the same Day in her Foot; the first Blood was received in a Porringer, and within a little while it turned very white; the next Blood was received in a Sawcer, which turned white immediately, like the White of

a Custard, within five or six hours after; the Physician chanced to see both; and that in the Porringer was half Blood and half Chyle, swimming upon it like Serum as white as Milk, and that in the Sawcer all Chyle, without the least appearance of a drop of Blood; and when he heated them distinctly over a gentle Fire, they both hardned; as the White of an Egg, when it is heated, or just as the Serum of the Blood doth when it is heated, but far, more White. This Maid was then in Good Health, and only let Blood, because she never had her Courses, yet of a very Florid Clear Complexion.

Of the Infusion of Liquors into the Blood.

And as Mr. Boyle was curious in all manner of Observations, which might illustrate the Works of Nature; so his Fame and great Curiosity, not only led him into the acquaintance of other ingenious Men of all Faculties and Sciences, but scarce any thing curious was done, which was not communicated to him, or which he had not a hand in; how far he was concerned in that Noble Experiment of the Infusion of Liquors immediately into the Mass of Blood, appears, from the Account of the Rise and Attempts of a way to convey Liquors immediately into the Mass of Blood, first proposed by Dr. Wren. The Account given in the Philosophical Transactions is as follows. Whereas there have lately appeared in Publick, some Books, printed beyond Seas, treating of the way of injecting Liquors into Veins, in which Books, the Original of that Invention seems to be ascribed to others, besides him to whom it belongs; it will not be thought amiss, if some-

Something be said, whereby the true Inventors Right, may be beyond Exception, asserted and preserved. To which end, there will need no more, than barely to represent, the time when, and the place where, and among whom, it was first started and put to tryal. To joyn all these Circumstances together, it's notorious, that at least six Years since, (which was 1659) before it was heard of, that any one did pretend to have so much as thought of it; the Learned and Ingenious Dr. *Christopher Wren*, did propose in the University of *Oxford*, (where he is now the worthy Savilian Professor of Astronomy, and where very many curious Persons are ready to attest this Relation) to that noble Benefactor to Experimental Philosophy Mr. *Boyle*, Dr. *Wilkins*, and other deserving Persons, that he thought he could easily contrive a way, to convey any Liquid Thing immediately into the Mass of Blood, viz. by making Ligatures on the Veins, and then opening them on the side of the Ligature towards the Heart, and by putting into them slender Syringes or Quills fastened to Bladders in the manner of Clyster-Pipes, containing the matter to be injected; performing that Operation upon pretty big and lean Dogs, that the Vessels might be large enough and easily accessible.

This Proposition being made, Mr. *Boyle* soon gave order for an *Apparatus*, to put it to Experiment, wherein at several Times, upon several Dogs, *Opium*, and the Infusion of *Croci Metallorum*, were injected into that part of the hind Legs of those Animals, whence the larger Vessels, that carry the Blood, are most easily

easily taken hold of, whereof the Success was, that the *Opium* being soon circulated into the Brain, did within a short time stupify, though not kill the Dog; but a large Dose of the *Crocus Metallorum*, made another Dog vomit up Life and all.

*Mercurial
Observations
and
their Re-
sults.*

The next Fragment we meet with, in the Philosophical Transactions relating to Mr. Boyle, is in a Relation of some Mercurial Observations and their Results; says the Author of the Transactions, Modern Philosophers, to avoid Circumlocutions, call that Instrument, wherein a Cylinder of Quicksilver of between 28 and 31 Inches in Altitude, is kept, suspended after the manner of the Torrecellian Experiment, a *Barometer* or *Baroscope*, first made publick, by that Noble Searcher of Nature, Mr. Boyle, and imployed by him and others, to detect all the minute variations in the pressure and weight of the *Atmosphere*. For the more curious and nice distinguishing of which small changes, Mr. Hook in the Preface to his *Micrography*, hath described such an Instrument with a Wheel contrived by himself, and by these two last Years Tryals of it, constantly found most exact for that Purpose; which being so accurate and not difficult to be made, is very desirable, that those who have a Genius and Opportunities of making Observations of this kind, would furnish themselves with such of these Instruments, as were exactly made and adjusted, according to the Method delivered in the newly mentioned Place.

To

To say something of the Observations made by this Instrument, and withal to excite studious Naturalists, to a sedulous prosecution of the same, the Reader may first take Notice, that the lately named Mr. Boyle hath, (as himself did intimate not long since to the Author of these Tracts) already made divers Observations of this kind, in the Year 1659 and 1660 before any others were publick, or by himself so much as heard of, though he hath hitherto forbore to divulge them, because of some other Papers (in whose Company they were to appear,) which being hindered by other Studies and Employments, he hath not yet finished.

And as a further Instance of the extraordinary Usefulness of this Invention, and the Honour and Esteem, Mr. Boyle obtained by that, as well as the rest of his Performances, we shall add what the Learned Dr. Beal says on this Occasion; says the Author of the Transactions, next that, besides several others, who, since I have had the Curiosity of making such Observations, the worthy and inquisitive Dr. John Beal is doing his part with much assiduity, — but what is to our present purpose is, the Honourable Character he gives Mr. Boyle, who is mentioned with peculiar Marks of Esteem by all Learned Men, — The said Dr. is so much pleased with the Discovery already made by the help of this Instrument, that he thinks it to be one of the most wonderful that ever was in the World, if we speak of strangeness and most wonder, and of Philosophical Importance, separate from the Interest of Lucre. For says he,

he, (*in one of his Letters,*) who could ever expect, that we Men should find an Art, to weigh all the Air that hangs over our Heads, in all the Changes of it, and as it were to weigh, and to distinguish by weight, the Winds and the Clouds? Or, who did believe, that by palpable Evidence, we should be able to prove the serenest Air to be most heavy, and the thickest Air, and when darkeſt Clouds hang neareſt us, ready to diſſolve or dropping, then to be lighteſt. And though, (*ſa he goes on*) we cannot yet reach to all the Uſes and Applications of it; yet we ſhould be entertained for a while, by the truly honourable Mr. Boyle, as the leading Perſon herein, upon the delight and wonder. To me, ſays he, it's a wonderful delight, that I have always in my ſtudy before my Eye ſuch a curious Ballance.

And in another of the Tranſactions, the Honourable Mr. Boyle is mentioned with no leſs regard to his worthy Invention. Says the Author, We ſhall begin this ſecond Year of our Publications in this kind, with a few more particular Obſervations upon the Ballance of the Air, as they are moſt happily invented and directed by Mr. Boyle, and deſerve to be proſecuted with care and diligence all the World over.

*An Account
of an Earth-
quake.*

From hence it appears, how much the World is obliged to the Honourable Mr. Boyle, for that happy Invention, both ſo pleaſant and uſeful; the next thing, we ſhall take Notice of, that occurs, is, a Confirmation of an Account of an Earthquake near *Oxford*, and the Concomitants thereof, which came from the Noble

Mr.

Mr. Boyle in a Letter to the Publisher, which is the following. As to the Earthquake, your Curiosity about it makes me sorry, that though I think, I was the first, that gave Notice of it to several of the *Virtuosi* at *Oxford*; yet the Account I can send you about it, is not so much of the thing it self, as about the Changes of the Air, that accompanied it, to inform you of which I must relate to you, that riding one Evening somewhat late betwixt *Oxford* and a Lodging, I have at a place, four miles distant from it, the Weather having been for a pretty while Frosty; I found the Wind so very Cold, that it reduced me to put on some Defensives against it, which I never since, nor if I forget not, all the foregoing Part of the Winter was obliged to make use of. My unwillingness to stay long in so troublesom a Cold, which continued very piercing till I had got half way homewards, did put me upon Galloping at no very easy rate; and yet before I could get to my Lodgings, I found the Wind turned and the Rain falling, which considering the shortness of the time, and that this Accident was preceded by a settled Frost, was surprizing to me, and induced me to mention it at my return, as one of the greatest and suddenest Alterations of Air, I had ever observed. And what Changes I found have been taken Notice of in the Gravity of the Air at the same time by that Accurate Observer, Dr. *Wallis*, who then suspected nothing of what followed, as I suppose he hath ere this told you himself. Soon after, by my guess about an hour, there was a manifest trembling in the House, where I was (which

(which stands high in Comparison of Oxford,) But it was not there so great, but that I, who chanced to have my Thoughts busied enough in other Matters than the Weather, should not have taken Notice of it as an Earthquake, but have imputed it to some other Cause, if one that you know, whose hand is imployed in this Paper, and begins to be a diligent Observer of Natural things, had not advertised me of it, as being taken Notice of by him and the rest of the People of the House. And soon after, there happened a brisk Storm, whereupon I sent to make Enquiry at a place called *Brill*, which standing upon much higher Ground, I supposed might be more obnoxious to the Effects of the Earthquake (of which had I had any suspicion of it, having been formerly in one, near the *Lacus Lemanus*, would have made me the more observant) But the Person I sent to, disabled by Sicknels to come over to me, writ me a Ticket, whose substance was. That the Earthquake was there much more considerable than where I lodged, and that a Gentleman's House whom he names, the House trembled very much, so as to make the Stones manifestly to move to and fro in the Parlour, to the great amazement and fright of all the Family. The Hill whereon this *Brill* stands, I have observed to be very well stored with Mineral Substances of several kinds, and from thence, I have been informed by others, that this Earthquake, reached a good many Miles. But I have neither leisure nor inclination to entertain you with uncertain reports of the extent and other circumstances, especially, since a little further time

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an Enquiry may enable me to give you a better Warranted Account.

The next thing worthy our Notice, and communicated by Mr. Boyle to the Royal Society, is some Observations and Directions about the *Barometer*. As to the *Barometrical* Observations you guessed right, that when I saw those of the Learned and Inquisitive Dr. Beal, I had not mine by me; yet since by the Communication you have made Publick, it's probable, that divers ingenious Men will be invited to attempt the like Observations, I shall, notwithstanding my present haste, mention to you some Particulars, which perhaps will not appear unseasonable, that came into my Mind upon the Reading of what you have presented the Curious.

Observations and Directions about the Barometer.

When I did, as you may remember, some Years ago publickly express and desire, that some Inquisitive Men would make *Baroscopical* Observations in several parts of *England*, if not in foreign Countries, and to assist them to do so, presented some of my Friends with the necessary Instruments, the declared Reason of my desiring this Correspondence, was amongst other things, that by comparing Notes, the Extent of the *Atmospherical* Changes, in point of Weight, might be the better estimated. But having not hitherto received some Accounts, that I hoped for, I shall now, without staying for them intimate to you, that it will be very convenient, that the Observers not only take Notice of the Day, but as near as they can of the Hour, wherein the height of the Mercurial Cylinder was observed; for I have often found, that

that within less than the compass of one Day, or perhaps half a Day, the Altitude of it, hath so considerably varied, as to make it in many Cases difficult to conclude any thing certainly from Observations, that agree but in the Day.

It will be requisite also, that the Observers give Notice of the Scituation of the place, where their Barometers stand; not only because it will assist Men to judge, whether the Instruments were duly perfected, but principally, because that though the Baroscope be good, nay, because it is so, the Observations will much disagree, even when the *Atmosphere* is in the same state as to Weight, if one of the Instruments stand in a considerable higher part of the Country than the other.

To confirm both the foregoing Admonitions, I must now inform you, that having in these Parts two Lodgings, the one at *Oxford*, which you know stands in a Bottom at the *Thames* side, and the other at a place four Miles thence, seated upon a moderate Hill, I found by comparing two Baroscopes, that I made, the one at *Oxford*, and the other at *Stanton St. Johns*, that though the former be very good, and hath been noted for such, during some Years, and the later was carefully filled; yet by Reason, that in the higher place, the incumbent Part of the *Atmosphere* must be lighter than in the lower, there is almost always 2 or 3 eighths of an Inch difference betwixt them. And having sometimes ordered my Servant to take Notice of the Disparity, and divers times carefully observed it my self, when I passed to and fro betwixt *Oxford* and

Stanton

Stanton, and the other did, as it were, by common consent to rise and fall together, so as that in the former, the Mercury was usually $\frac{1}{8}$ higher than in the later.

Which Observations may teach us, that the Subterraneous steams which ascend into the Air, or the other Causes of the varying weight of the *Atmosphere*, do many times, and at least in some places, uniformly enough effect the Air, to a greater height, then till I had made this Tryal, I durst conclude.

But as most of the Barometrical Observations are Subject to acceptions, so I found the formerly mentioned to be; for, to omit lesser variations, riding one Evening from *Oxford* to *Stanton*, and having before I took Horse, looked upon the Baroscope in the former of these two places, I was somewhat surprized to find at my coming to the later, that in places no further distant, and notwithstanding the shortness of the time (which was but an hour and a half, if so much) the Barometer at *Stanton* was short of it's usual distance from the other, near a quarter of an Inch, though the weather being fair and calm, there appeared nothing of manifest Change in the Air, to which I could ascribe so great a Variation; and though also since that time, the Mercury in the two Instruments, hath for the most Part proceeded to rise and fall as before.

And these being the only Observations I have yet met with, wherein Baroscopes at some distance of Place and Difference of height, have been compared (though I cannot now send

send you the Reflections I have now made up. on them) as the opportunity I have had to make them my self, rendered them not unpleasant to me, so perhapstheNovelty will keep them from being unwelcom to you. And I confess I have had some flying suspitions, that the odd *Phænomena* of the Baroscope, which have hitherto more posed than instructed us, may in time, if a competent Number of Correspondents do diligently prosecute the Inquiries (especially with Baroscopes accommodated with Mr *Hook's* ingenious Additions) make Men some Luciferous Discoveries, that possibly we do not yet dream of.

I know not, whether it will be worth while to add, that since I was obliged to leave *London*, I have been put upon so many lesser removes, that I have not been able to make Baroscopical Observations with such a constancy, as I have wished ; but as far as I remember, the Quick-silver hath been for the most Part so high, as to invite me to take Notice of it, and to desire you to do me the favour to enquire amongst your Correspondents, whether they have observed the same things. For if they have, this lasting (though not interrupted) Altitude of the Quick-silver happening, when the Seasons of the Year have been extraordinary dry (so much as to become a grievance, and to dry up as one of the late Gazets informs us, some Springs near *Weymouth*, that used to run constantly) it may be worth Inquiry, whether these obstinate Droughts, may not by cleaving of the Ground too deep, and making it also in some places more Porous, and

as it were Spungy, give a more copious Vent then is usual to Subterraneous Steams, which ascending into the Air increase the Gravity of it. The Inducements I have to propose this Inquiry, I must not now stay to mention; but perhaps if the Observation holds, it may prove not useless in Reference to some Diseases.

Perhaps it will be needless to put you in mind of directing those *Virtuosi*, that may desire your Instructions about Baroscopes to set down in their Diaries, not only the Day of the Month, and Hour of the Day, when the Mercuries height is taken; but in a distinct Column, the Weather, especially the Winds both as to the Quarters, whence they blow (though that be not always so easy nor necessary) and as to the violence or remissness, wherewith they blow. For though it be more difficult than one would think, to settle any General Rule, about the rising and falling of the Quick-silver, yet in these Parts, one of those, that seem to hold ofteneft is, that when high Winds blow, the Mercury is the lower; yet that it self does sometimes fail; for this very day, though on that Hill, where I am, the somewhat Westerly Winds, have been blustering enough; yet ever since Morning, the Quick-silver hath been rising, and is now risen $\frac{1}{8}$ of an Inch.

I had thought to add something about another kind of Baroscope, but inferior to that cause — so for that Letter; to which the Publisher of the Transactions adds, since which time another from the Noble Observer intimates. That as for that cause of the height of

the Quick-silver in draughts, which by him, is suspected to be the Elevation of Steams from the Crust or Superficial Parts of the Earth, which by little and little may add to the weight of the *Atmosphere*, being not as in other seasons, carryed down from time to time by the falling Rains, it agrees not ill with what he hath had since occasion to observe; for whereas about *March 12th.* at *Oxford*, the Quick-silver was higher than for ought he knew, had been yet observed in *England*, viz. above $\frac{1}{6}$, above 30 Inches, upon the first considerable Showers that have intercepted our long drought, as he affirms, he foretold divers hours before, that the Quick-silver would be very low (a blustering Wind concurring with the Rain) so he found it at *Stanton* to fall $\frac{1}{8}$ below 29.

*A Way of
preserving
Birds, &c.*

The next Fragment we shall take Notice of, which Mr. Boyle Communicated to the Royal Society is, a way of preserving Birds taken out of the Egg and other small *Fetus's*, the Letter is as followeth. The time of the Year invites me to intimate to you, that amongst the other uses of the Experiment, I long since presented the Society of preserving Whelps taken out of the Dams Womb and other *Fetus's*, or Parts of them in Spirit of Wine, I remember, I did, when I was Sollicitous to observe the Process of Nature, in the Formation of a Chick, open Hens Eggs, some at such a Day, and some at other Days, after the beginning of the Incubation, and carefully taking out the Embroy's, embalmed each of them in a distinct Glass (which is to be carefully stopped) in Spirit of Wine, which I did, that so I might have them

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in readiness, to make on them at any time the Observations I thought them capable of affording, and to let my Friends at other Seasons of Year see, both the different Appearances of the Chick at the third, fourth, seventh, fourteenth, and other days, after the Eggs had been sat on; and especially some particulars not obvious in Chickens that go about, as the hanging of the Guts out of the Abdomen, &c. How long the tender Embryo of the Chick soon after the *Punctum Salidens* is discoverable, and whilst the Body seems but a little Organized Gelly, and some while after that will be this way preserved, without being too much shrivelled up, I was hindered by some Mischances to satisfy my self; but when the *Fetus's* I took out, were so perfectly formed as they were wont to be about the seventh day, and after, they so well retained their shape and bulk, as to make me not repent of my Curiosity; and some of those I did very early this Spring, I can yet shew you. I know I have mentioned an easy Application of what I some Years since made publick enough; but yet not finding it to have been made by any other, and being perswaded by Experience, that it may be extended to other *Fetus's*, which this Season (*the Spring*) is time to make provision of, I think the Advertisement will not prove unseasonable to some of our Friends, tho' being now in haste, and having now in my thoughts divers Particulars, relating to this way of preserving Birds taken out of the Egg, and other small *Fetus's*, I must content my self to have mentioned that which is Essential, leaving divers other things, which a little Practice may teach

teach the Curious unmentioned. Notwithstanding which, I must not omit these two Circumstances, the one, that when the Chick was grown big, before I took it out of the Egg, I have, but not constantly, mingled with the Spirit of Wine, a little Spirit of *Sal Armoniack*, made by the help of Quick-lime, which Spirit I choose, because, though it abounds in a Salt not sower, but urinous, yet I never observed it (how strong soever I made it) to coagulate Spirit of Wine. The other Circumstance is, that I usually found it convenient, to let the little Animals I meant to embalm lye for a little while in ordinary Spirit of Wine, to wash off the looser filth, that is wont to adhere to the Chick, when taken out of the Egg, and then having put either the first kind of Spirit, or better upon the same Bird, I suffered it to soak some hours (perhaps some days *Pro re nata*) therein, that the Liquor, having drawn as it were what Tincture it could, the *Fetus* being removed into more pure and well dephlegmed Spirit of Wine, might not discolour it, but leave it almost as limpid as before it was put in.

*A new kind
of Baroscope.*

The next thing we shall take Notice of is, an Account of a new kind of Baroscope, which may be called *Statical*; and of some advantages and conveniences it hath above the Mercurial communicated some while since, by the Honourable *Robert Boyle*, which is this; as for the new kind of Baroscope, which not long ago I intimated to you, that my haste would not permit me to give you an Account of, since your Letters acquaint me, that you still design a Communicating to the Curious as much Information

as may be, in reference to Baroscopes, I shall venture to send you some Account of what I did but name, in my former Letter to you.

Though by a passage you meet with in the 19th. and 20th. Pages, of my Thermometrical Experiments and Thoughts, you may find, that I did some Years ago, think upon this new kind of Baroscopes; yet the changes of the *Atmosphere's* weight, not happening to be then such as I wished, and being unwilling to deprive my self of all other Use of the exactest Ballance, that I, or perhaps any Man ever had, I confess to you, that successive Avocations put this Attempt for two or three Years out of my Thoughts, till afterwards returning to a place, where I chanced to find two or three pair of Scales, I had left there, the sight of them brought it into my Mind; and though I was then unable to procure exacter, yet my desire to make the Experiment some amends, for so long a neglect, put me upon considering, that if I provided a Glass Bubble, more than ordinary large and light, even such Ballances as those, might in some measure perform, what I had tryed with the strangely nice ones above mentioned.

I caused then to be blown at the flame of a Lamp, some Glass Bubbles, as large, thin and light, as I could then procure, and chusing amongst them one, that seemed the least unfit for my turn, I counterpoised it in a pair of Scales, that would loose their *Æquilibrium* with about the 30th. part of a grain, and were suspended at a frame. I placed both the Ballance and the Frame by a good Baroscope,

from whence I might learn the present weight of the *Atmosphere*. Then leaving these Instruments together, though the Scales, being no nicer than I have expressed, were not able to shew me all the Variations of the Air's weight, that appeared in the Mercurial Baroscope, yet they did what I expected, by shewing me variations no greater, than altered the height of Quicksilver half a quarter of an Inch, and perhaps much smaller than those. Nor did I doubt, that if I had either tender Scales, or the means of supplying the Experiment with convenient Accommodations, I should have discerned far smaller Alterations of the weight of the Air, since I had the pleasure to see the Bubble sometimes in an *Æquilibrium*, with the Counterpoise; sometimes, when the *Atmosphere* was high, Preponderate so manifestly, that the Scales being gently stirred, the Cock would play altogether on that side, at which the Bubble was hung; and at other times (when the Air was heavier) that which at the first was but the Counterpoise, would preponderate, and upon the Motion of the Balance, make the Cock vibrate altogether on it's side. And this would continue sometimes many Days together, if the Air so long retained the same Measure of Gravity; and then upon other changes, the Bubble would regain an *Æquilibrium*, or a Preponderance; so that I had oftentimes the satisfaction, by looking first upon the Statical Baroscope, to foretel, whether in the Mercurial Baroscope the Liquor were high or low. Which Observations, though they hold as well in Winter, and several

ral times in Summer, as well as in the Spring, yet the frequency of their Vicissitudes (which perhaps was but accidental) made them more pleasant in the later of these Seasons.

So that the Matter of Fact having been made out, by variety of repeated Observations, and by sometimes comparing several of those new Baroscopes together, I shall add some of these Notes about this Instrument, which readily occur to my Memory, reserving the rest to another Opportunity.

And *first*, If the Ground, on which I went in framing this Baroscope be demanded, the answer in short may be, 1. That though the Glass Bubble, and the Glass Counterpoise, at their time of first being weighed, be in the Air, wherein they both are weighed, exactly of the same weight, yet they are nothing near of the same bulk; the Bubble, by reason of it's capacious Cavity (which contains nothing but Air, or something less than Air,) being perhaps a hundred or two hundred times (for I have not conveniency to measure them) bigger than the Metalline Counterpoise. 2. That according to a Hydrostatical Law, if two Bodies of equal gravity, but unequal bulk, come to be weighed in another Medium, they will be no longer *Æquiponderant*; but if the new Medium be heavier, the greater Body, as being lighter in Specie, will loose more of it's weight, than the lesser, and more compact; but if the new Medium be lighter than the first, than the bigger Body will outweigh the lesser. And this disparity arising from the change of Mediums, will be so much the greater,

er, by how much the greater Inequality of bulk, there is betwixt the Bodies formerly *Æquiponderant*. 3. That laying these two together, I considered that it would be all one, as to the Effect to be produced, whether the Bodies were weighed in Mediums of different Gravity, or in the same Medium, in case it's specifick Gravity were considerably altered; and consequently, that since it appeared by the Baroscope, that the weight of the Air was sometimes heavier, and sometimes lighter, the Alterations of it, in point of gravity, from the weight it was of, at first counterpoising of the Bubble of it, would unequally affect, so large and hollow a Body, as the Bubble, and so small and dense a one as a Metalline Weight. And when the Air by an increase of Gravity, should become a heavier Medium than before, it would bouy up the Glass more than the Counterpoise, and if it grew lighter than it was at first, would suffer the former to preponderate. And though our *English* Air be a thousand times lighter than Water, the difference in weight of so little Air, as is but equal in bulk to a Bubble, seemed to give small hopes, that it would be sensible upon a Ballance, yet by making the Bubble very large and light, I supposed and found the Event I have already related.

Secondly, The Hermetically sealed Bubble I employed, was of the bigness of a somewhat large Orange, and weighed about a Drachm and ten Grains. But I thought it very possible if I had been better furnished with Conveniences (wherein I afterwards found I was not mistaken)

mistaken) to make (among many that might be expected to miscarry) some that might be preferable to this, either for Capacity or Lightness, or both; especially, if care be taken, that they be not sealed up whilst too hot. For though one would think, that it were advantageous to rarify and drive out the Air as much as possible, because in such sealed Bubbles the Air it self hath a Weight, yet this Advantage countervails not the Inconveniencies of being obliged to increase the Weight of the Glass, which when it includes highly rarified Air, if it be not somewhat stronger, will be broken by the pressure of the external Air, as I have sufficiently tried.

Thirdly, I would have tried, whether the dryness and moisture of the Air, would have in any Measure altered the Weight of the Bubble, as well as the variation of Gravity produced in the *Atmosphere* by other Causes; but the extraordinarily constant absence of Fogs, kept me from making Observations of this kind, save, that one Morning early, being told of a Mist, I sent to see (being my self in Bed) whether it made the Air so heavy, as to bony up the Bubble, but did not learn, that that Mist had any sensible Operation on it.

Fourthly, By Reason of the Difficulties and Casualties, that may happen about the procuring and preserving such large and light Bubbles, as I have been lately mentioning, it may in some Cases prove a Convenience to be informed; that I have sometimes, instead of one sufficiently large Bubble, made use of two, that were smaller. And though a single Bubble of competent

competent bigness be much preferable, by Reason that a far less Quantity and Weight of Glass, is requisite to comprize an equal Capacity, when the Glass is blown into a single Bubble, than when it is divided into two; yet I found that the employing of two instead of one, did not so ill answer my Expectations, but that they may for a need, serve the turn, instead of the other, than which they are more easy to be procured: And if the Ballance be strong enough to bear so much Glass, without being injured; by employing two or a greater number of large Bubbles, the Effect may be more conspicuous, than if only a single Bubble be employed.

This Instrument may be much improved, by divers Accommodations; as,

First, There may be fitted to the *Ansa* or Cheeks of the Ballance, an arch of a Circle, divided into 15 or 20 Degrees, more or less, according to the Goodness of the Ballance, that the Cock resting over against these Divisions, may readily and without calculation, shew the Quantity of the Angle, by which, when the Scales propend either way, the Cock declines from the Perpendicular, and the Beam from it's Horizontal Parallelism.

Secondly, Those that will be so curious, may, instead of the Ordinary Counterpoise of Brasse, employ one of Gold, or at least of Lead, whereof the later being of equal Weight with the Brasse, is less in Bulk, and the former amounts not to half it's bigness.

Thirdly

Thirdly, These Parts of the Ballance that may be made of Copper or Brass, without any prejudice to the Exactness, will by being made of one of these Materials, be less subject than Steel which yet if well hardened and polished, may last good, a great while,) to rust with long standing.

Fourthly, Instead of these Scales, the Bubble may be hung at one end of the Beam, and only a Counterpoise to it at the other, that the Beam may not be burthened with unnecessary Weight.

Fifthly, The whole Instrument, if placed in a small frame, like a square Lanthorn with Glass Windows, and a hole at the top for the Commerce of the Internal and External Air, will be more free from Dust, and irregular Agitations, to the later of which it will be otherwise sometimes incident.

Sixthly, This Instrument being accommodated with a light Wheel and an Index (such as have been applyed by the excellent Dr. Christopher Wren to open Weather Glasses, and by the ingenious Mr. Hook to Baroscopes) may be made to shew much more minute Variations than otherwise.

Seventhly, And the length of the Beam, and exquisiteness of the Ballance, may easily without any of the foregoing helps, and much more with them, make the Instrument far exacter, than any of those I was reduced to employ, and to these Accommodations, divers others may be suggested, by a farther consideration of the Nature of the thing, and a longer Practice.

Though

Though in some Respects, this Statical Baroscope be inferior to the Mercurial, yet in others it hath it's advantages and conveniences above it.

And first, It confirms *ad Oculum* our former Doctrin, that the falling and rising of the Mercury depends upon the varying weight of the *Atmosphere*; since in this Baroscope it cannot be pretended, that a *fuga vacui* or a *funiculus*, is the cause of the changes we observe, Secondly, It shews, that not only the Air hath Weight, but a more considerable one, than some Learned Men, who will allow me to have proved it hath some weight, will admit; since even the variation of the weight in so small a Quantity of weight, as is but equal in bulk to an Orange, is manifestly discoverable upon such Ballances, as are none of the nicest, Thirdly, This statical Baroscope will be oftentimes more portable than the other; for many will find it more easy, to procure a good pair of Gold Scales, and a Bubble or two, than a long Cane sealed, a quantity of Quicksilver, and all the other Requisites of the Mercurial Baroscope, especially, if we comprize the trouble and skill, that is requisite to free the deserted part of the Tube from Air. Fourthly, And whereas the difficulty of removing the Mercurial Instrument, hath kept Men from so much as attempting to do it, even to neighbouring places; the Essential Parts of the Scale Baroscope, for the frame is none of them, may very easily in a little room be carryed, whether one will, without the hazard of being spoiled or injured. Fifthly, There is not in
statical

statical Baroscopes, as in the other, a danger of uncertainty, as to the goodness of the Instruments, by reason that in these, the Air is in some more and in some less perfectly excluded; whereas in those, that consideration hath no place. And by the way, I have sometimes upon this Account, been able to discover by our new Baroscope, that an esteemed Mercurial one, to which I compared it, was not well freed from Air. *Sixthly*, It being as I formerly intimated, very possible, to discover Hydrostatically, both the bigness of the Bubble, and the contents of the Cavity, and the weight & dimensions of the Glassy Substance (which together with the included Air, make up the Bubble) much may be discovered by this Instrument, as to the weight of the Air, absolute or respective. For when the Quicksilver in the Mercurial Baroscope, is either very high or very low, or at a middle station, bringing the Scale Barometer to an exact *Æquilibrium* (with very minute Divisions of a Grain) you may by watchfully observing, when the Mercury is risen or fallen just an Inch, or a fourth, or half an Inch, and putting in the like minute Divisions of a Grain to the lighter Scale, till you have again brought the Ballance to an exquisite *Æquilibrium*, you may, I say, determin, what known weight in the statical Baroscope, answers such determinate Altitudes, of the ascending and descending Quicksilver, in the Mercurial. And if the Ballance be accommodated with a divided Arch, or a Wheel and Index, these Observations will assist you, for the future, to determinate readily,

dily, by seeing the Inclination of the Cock, or the degree marked by the Index, what Pol- lency the Bubble hath, by the Change of the *Atmospherical* Weight, acquired or lost. Some Observations of this Nature, I watchfully made, sometimes putting in a 64th. sometimes a 32th. sometimes a 16th. and sometimes heavier Parts of a Grain to the lighter Scale. But one that knew not for what Uses those little Papers were, coming to a Window, where my Baro- scopes stood, so unluckily shook them out of the Scales, and confounded them, that he rob- bed me of the Opportunity of making the nice Observations, I intended, though I had the sa- tisfaction of seeing they were to be made. *Seventhly*, By this Statical Instrument, we may be assisted to compare the Mercurial Baroscopes of several Places, though never so distant, and to make some estimates of the Gravities of the Air therein, as for Instance, I have found by Observation, that the Bubble I employ (and one may have divers Bubbles of several sizes, that the one may repair any Mischance, that may happen to another) weighed just a Drachm, when the Mercurial Cylinder was at the height of 29 $\frac{1}{2}$ Inches (which in some places I have found a moderate Altitude) and that the Addition of the 16th. part of a Grain, is requisite to keep the Bubble in an *Æquili- brium*, when the Mercury is risen an 8th. or any determinate part of an Inch, above the former station. When I come to another place, where there is a Mercurial Barometer, as well freed from Air as mine (for that must be sup- posed) if taking out my Scale Instrument, it appears

appears to weigh precisely a Drachm, and the Mercury in the Baroscope there stands at $29\frac{1}{2}$ Inches, we may conclude, the gravity of the *Atmosphere* not to be sensibly unequal in both those two places, though very distant. And though there be no Baroscope there, yet if there be an Additional weight, as for Instance, the 16th Part of a grain requisite to be added to the Bubble, to bring the Scales to an *Æquilibrium*, it will appear, that this second Place is, at that time so much heavier, than the Air at the former place was, when Mercury stood at $29\frac{1}{2}$ Inches.

But in making such Comparisons, we must not forget to consider, the Scituation of the several Places, if we mean to make Estimates not only of the weight of the *Atmosphere*, but of the weight and density of the Air. For tho' the Scales will shew (as has been said) whether there be a difference of weight in the *Atmosphere* at the two places, yet if one of them be in a Vale, or Bottom, and the other on the Top, or some elevated Part of the Hill, it is not to be expected, that the *Atmosphere* in this later place, should gravitate as much as the *Atmosphere* in the former, on which a longer Pillar of Air does lean or weigh.

And the mention I have made of the differing Scituation of Places, puts me in mind of something, that may prove another Use of our Statistical Baroscope, and which I had thought of making Tryal of, but was accidentally hindered of the Opportunity of doing it. Namely, that by exactly pausing the Bubble, at the foot of a high

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Steeple

Steeple or Hill, and carrying in a close frame to the Top, one may by the weight requisite to be added to counterpoise there, bring the Beam to it's Horizontal Position, observe the difference of the Weight of the Air, at the bottom and at the Top; and if the Hill be high enough, at some intermediate Stations. But how far this may assist Men, to estimate the absolute or comparative height of Mountains, and other elevated Places; and what other Uses the Instrument may be put to, when it is duly improved; and the Cautions that may be requisite in the several Cases, that shall be proposed, I must leave to more Leisure, and further Consideration.

A new frigorifick Experiment

The next thing that offers it self, which Mr. Boyle communicated to the Royal Society, is, a new Frigorifick Experiment shewing, how a Considerable Degree of Cold may be suddenly produced without the help of Snow, Ice, Hail, Wind, or Nitre, and that at any time of the Year, you may remember, says Mr. Boyle, that the Spring before the last, I shewed a particular account of a way, wherein by a certain Substance obtained from *Sal Armoniack*, I could presently produce a considerable degree of Cold, and that with odd Circumstances without the help of Snow, Ice, Nitre, &c. But that Experiment being Difficult and Costly enough, and designed to afford Men Information and Accommodations, I afterwards tryed, what some more cheap, and facile mixtures of likely Bodies with *Sal Armoniack* would do towards the Production of Cold, and afterwards I began to

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to consider, whether to that purpose alone (for my first Experiment was designed to exhibit other *Phænomena* too,) those mixtures might not without Inconvenience be omitted; and I was much confirmed in my Conjecture, by an accident, which was casually related to me by a very Ingenious Physician of my acquaintance, but not to be repeated to you in few words, though he complained he knew not what to make of it.

Amongst the several ways, by which I have made in frigidating Mixtures with *Sal Armoniac*. The most simple and facile is this; take one pound of Powdered *Sal Armon.* and about three Pounds or Pints of Water, put the Salt into the Liquor either all together, if your design be to produce an Increase, though but a short Coldness; or at two or three or four times, if you desire, that the produced Coldness should rather last somewhat longer than be so great. Stir the Powder in the Liquor with a Stick or Whale-Bone (or some other thing that will not be injur'd by the fretting brine, that will be made) to hasten the Dissolution of the Salt, upon the quickness of which depends very much the Intensity of the Cold, that will ensue upon this Experiment; for the clearing up whereof I shall annex the following particulars.

First, That a considerable degree of Cold is produced by this Operation is very evident, *First*, to the Touch, *Secondly*, by this, that if you make the Experiment, as I sometimes do, in a Glass Body, or a Tankard, you may observe, that while the Solution of the Salt is making

the outside of the Metalline Vessel will as high as the mixture reaches within, he bedewed with a Multitude of little Drops of Water, as it happens when mixtures of Snow and Salt being put into Glasses or other Vessels, the aqueous Vapours that swim to and fro in the Air; and chance to glide along the sides of the Vessels, are by the Coldness thereof condensed into Water. And in our *Armoniack* Solution you may observe, that if you wipe off the dew from any Particular Part of the outside of the Vessel, whilst the Solution does yet vigorously go on, it will quickly collect fresh dew, which may sometimes be Copious enough to run down the sides of the Vessel. But *Thirdly*, the best and surest way of finding out the Coldness of the Mixture, is, that which I shewed you by plunging into it a good sealed Weather-Glass furnished with Tincted Spirit of Wine. For the ball of this being put into our Frigorifick mixture, the Crimson Liquor will nimbly enough descend much Lower, than when it was kept in the open Air, in common Water of the same Temper with that, wherein the *Sal Armoniack*. And if you remove the Glass out of our mixture into common Water, the Tincted Spirit will hastily enough re-ascend for a pretty while according to the greater or lesser time that it continued in the *Armoniack* Solution. And this hath succeeded with me, when instead of removing the Mixture into common Water, I removed it into Water newly impregnated with Salt-Peter.

Secondly

Secondly, The Duration of the Cold produced by this Experiment, depends on several Circumstances, as *First*, upon the Season of the Year and the present Temper of the Air; for in Summer and hot Weather, the Cold will sooner decay and expire. *Secondly*, upon the Quantity of Salt and Water; for if both these be great, the Effect will be as well more lasting as more considerable. *Thirdly*, for ought I yet know, we may add the Goodness and Fitness of the particular Parcel of Salt, that is employed; for though it be hard to discern before hand, which will be the more, and which will be the less proper, yet some Tryals have tempted me to suspect, that there may be a Considerable Disparity, as to their fitness to produce Cold, betwixt Parcels of Salt that are without Scruple, looked upon to be *Sal Armoniack*; of which difference it were not perhaps very difficult to assign in probable Reasons from the Nature of the Ingredients of this compound Concrete, and the ways of preparing it. But the duration of the Cold may be conceived to depend also. *Fourthly*, upon the way of putting the Salt into the Water; for if you cast it in all at once, the Water will sooner acquire an Intense Degree of Coldness, but it will also sooner return to it's former Temper; whereas, if you desire but an Inferior degree of that Quality, but that it may last longer (which will usually be the most convenient for the cooling of Drinks) then you may put in the Salt by little and little, for keeping a long Weather-Glass for a good while in our impregnated Mixture, I often purposely tryed, that when the tinctured

Spirit subſided but ſlowly, or was at a ſtand, by putting in from time to time, two or three Spoonfuls of freſh Salt, and ſtirring the Water to quicken the Diſſolution, the Spirit of Wine would again deſcend, if it were at a ſtand or riſing, or ſubſide much more ſwiftly than it did before. And if you would lengthen the Experiment, it may not be amiſs, that part of the *Sal Armoniack* be but groſſly beaten that it may be the longer in diſſolving, and conſequent-ly in cooling the Water. Whiſt there are dewy drops produced on the outſide of the Veſſel, it's a ſign that the Cold within continues pretty ſtrong; for when it ceases, theſe drops eſpecially in warm Weather will by degrees vaniſh. But a ſurer way of Meaſuring the Duration of the cold is, by removing from time to time the ſealed Weather-Glaſs, out of the Saline Mixture into the ſame common Water, with part of which it was made. And though it be not eaſy to determin any thing particularly about this Matter; yet it may ſomewhat aſſiſt you in your Eſtimates, to be informed, that I have in the Spring by a Good Weather-Glaſs, found a ſenſible adventitious Cold, made by a Pound of *Sal Armoniack* at the utmoſt to laſt about two or three hours.

Thirdly, To cool drink with this mixture you may put them in thin Glaſſes, the thinner the better, which (their Oriſices being ſtopped, and ſtill kept above the Mixture) may be moved to and fro in it, and then be immediately poured out to be drunk. Though when the Glaſs I employed, was conveniently ſtopped, as like a Sugar Loaf, or with a long Neck, I found it

it not amiss to drink it out of that, without pouring it out into any other, which can scarce be done without lessening the Coolness. The refrigeration, if the Glass will be convenient is quickly performed. And if one have a mind to cool his hands, he may readily do it, by applying them to the outside of the Vessel, that contains the refrigerating mixture; by whose help, pieces of Chrystal or Bullets for the Cooling of the Hands of those Patients, to whom it may be allowed, may be potently cooled, and other such refreshments may be easily procured.

Fourthly, How far *Sal Armoniack* mingled with Sand or Earth, and not dissolved, but only moistened with a little Water sprinkled on it, will keep Bottles of Wine or other Liquors more cool than the Earth, or that Sand will do, I have not yet had opportunity, by sufficient Tryals fully to satisfy my self, and therefore resign that Enquiry to the Curious.

Fifthly, For the Cooling of Air and Liquors, to adjust Weather-Glasses (to be able to do which at all times of the Year, was one of the chief Aims that made me bethink my self of this Experiment) or to give a small Quantity of Beer, &c. a moderate degree of coolness, it will not be requisite to employ near so much as a whole Pound of *Sal Armoniack* at a time; for you may easily observe by a sealed Weather-Glass, that a very few Ounces, well powdered and nimbly dissolved, in about 4 times the weight of Water will serve well enough for many purposes.

And that you may the less scruple at this, I shall tell you, that even before and after Midsummer, I have found the Cold producible by our Experiment to be considerable and useful for refrigerating of Drinks, &c. but if the *Sal Armoniack* be of the fittest sort, and if the season of the year do make no disadvantageous Difference, the Degree of Cold, that may be produced by no more than one Pound, if not by less, of *Sal Armoniack*, may within it's own Sphere of Activity be much more vehement than I presume you yet imagin, and may affords us excellent standards to adjust sealed Weather-Glasses by, and for several other Purposes. For I remember that in the Spring about the End of *March*, or beginning of *April*, I was able with one pound of *Sal Armoniack* and a requisite proportion of Water, to produce a Degree of Cold much greater than was necessary the preceeding Winter to make it Frosty Weather abroad, nay, I was able to produce real Ice in space of time almost incredibly short. To confirm which particulars, because they will probably seem strange to you, I shall here annex the Transcript of an Entry, that I find in a Note Book, of the *Phænomena* and success of one of those Experiments, as I then tryed it, though I shall be ashamed to expose to your Perusal a thing so rudely penn'd; if I did not hope, you would consider, that it was hastily wrote for my own Remembrance. And that you may not stop at any thing in the immediately annexed Note, or the two that follow, it will be requisite to premise this Account of the sea Thermoscope, which was a good one, wherewith

wherewith these Observations were made; that the length of the Cylindrical Pipe was 16 Inches, the Ball about the bigness of a large Wall-Nutt, and the Cavity of the Pipe by guess about an eight or ninth Part of an Inch Diameter.

The first Experiment is thus registred, *March* the 27. in the sealed Weather-Glass, when first put into the Water, the tinted Spirit rested at $8\frac{2}{3}$ Inches: being suffered to stay there a good while, and now and then stirred to and fro in the Water, it descended at length a little beneath $7\frac{2}{3}$ Inches, then the *Sal. Armoniack* being put in, within about a quarter of an hour or a little more, it descended to $2\frac{1}{4}$ Inches; but before that time, in half a quarter of an hour, it began manifestly to freeze the Vapours and Drops of Water on the outside of the Glass. And when the frigorifick Power was arrived at the height, I several times found, that Water thinly placed on the outside, whilst the mixture within was nimbly stirred up and down, would freeze in a quarter of a Minute. At about $\frac{1}{2}$ of an hour after the infrigerating Body was put in the Thermoscope, that had been taken out a while before, and yet was risen but to the lowest freezing Mark, being again put into the Liquor, fell an Inch below the Mark. At about $2\frac{1}{2}$ hours from the first solution of the Salt, I found the tinted Liquor to be in the midst between the freezing Marks, whereof there was at 5, Inches (at which height when the Tincture rested, it would usually be some, though but a small Frost abroad) and the other at $4\frac{1}{3}$ Inches, which was the height to which strong and durable Frosts had reduced the Liquor in the Winter.

At

At 3 hours after the beginning of the Operation, I found not the crimson Liquor higher than the upper freezing Mark newly mentioned; after which it continued to rise very slowly, for about an hour longer, beyond which time I had not occasion to observe it.

Thus far the Note Book, wherein there is mention made of a Circumstance, of some former Experiments of the like kind, which I remember was very conspicuous in this newly recited. For the frigorifick Mixture, having been made in a Glass Body, with a large and flattish bottom, a quantity of Water which I purposely spilt upon the Table, was by the Operation of the mixture within the Glass, made to freeze, and that strongly enough, the bottom of the Cucurbite to the Table, that stagnant Liquor being turned into solid Ice, that continued a considerable while unthawed away, and was in some places about the thickness of half a Crown Piece.

Another Observation made the same spring, but less solemn, as meant chiefly to shew the duration of Cold in a high degree, is recorded in these Terms; The first time the sealed Weather-Glass was put in, before it touched the common Water, it stood at $8\frac{1}{2}$ having been left there a considerable while, and once or twice agitated in the Water, the tinted Liquor sunk but to $7\frac{1}{2}$ or at the farthest $7\frac{2}{3}$, then the frigorifick Liquor being put into the Water, with Circumstances disadvantageous enough, in about half a quarter of an Hour, the tinted Liquor fell beneath $7\frac{1}{3}$, and the Thermoscope being taken out, and then put in again, an hour after the Water had been first frigidated,

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subsidid beneath 5 Inches, and consequently within $\frac{4}{5}$ of an Inch of the Mark of the strongly freezing weather.

Seventhly, Whereas the grand thing, that is like to keep this Experiment from being as generally useful, as perhaps it will prove luciferous, is the dearness of *Sal. Armoniack*, two things may be offered to lessen this Inconvenience, for first, *Sal. Armoniack*, might be made much cheaper, if instead of fetching it beyond Sea, our Country men made it here at home (which it may be easily, and I am ready to give you the receipt, which is no great Secret) but next I considered, that probably the infrigida-tion Vertue of our Mixture, might depend on the peculiar Texture of the *Sal. Armoniack*, whereby, whilst the Water is dissolving it either some frigorifick Particles are extricated or excited, or rather some Particles which did before more agitate the minute Particles of the Water, are expelled, or invited out by the ambient Bodies, or come to be clogged in their Motion; whence it seems reasonable to expect, that upon the reunion of the saline Particles into such a Body, as they had constituted before, the redintegrated *Sal. Armoniack*, having near upon the same Texture, would upon it's being redissolved, produce the same, or a not much inferior degree of Coldness; and hereupon tho' I well enough foresaw, that an *Armoniack* Solution, being boyled up in earthen Vessels (for Glass ones are too chargeable) would by piercing them, both lose the more subtle Parts, and thereby somewhat impair the Texture of the rest; yet I was not deceived in expecting,

that

that the dry Salt remaining in the Pipkins, being dissolved in a due proportion of Water, would very considerably inrigidate it; as may further appear by the Notes, which for your greater satisfaction you will find here subjoyn'd, as soon as I have told you, that though for want of other Vessels, I was first reduced to make use of Earthen ones, and the rather, because some Metalline Vessels, will be injured by the dissolved *Sal. Armoniack*, if it be boyled in them, yet I afterwards found some Conveniences in Vessels of other Metals, as Iron, whereof you may command a further Account.

March the 29th. the Thermoscope in the Air was at 8 $\frac{1}{2}$ Inches, being put into a somewhat larger evaporating Glass, filled with Water, it fell (after it staid a pretty while, and had been agitated in the Liquor) to 8 Inches, and then about half the Salt, or less, that had been used twice before, and felt much less cold than the Water, being put in and stirred about, the tinted Spirit subsided with a visible Progress, till it was fallen manifestly beneath four Inches, and then, having caused some Water to be freshly pumped and brought in, though the newly mentioned Solution were mixed with it, yet it presently made the Spirit of Wine manifestly to ascend in the Instrument, much faster than one would have expected, &c.

And thus much may suffice for this time, concerning our frigorifick Experiment, which I scarce doubt, but the *Cartesians* will lay hold on, as very favourable to some of their Tenents, which you will easily believe, it is not to the Opinion I have elsewhere opposed, of these

these Modern Philosophers, that would have *Salt Petre* to be the *primum frigidum* (though I found by tryal, that whilst it's actually dissolving, it gives a much considerabler degree of Cold than otherwise.) But upon the Reflections that may be made on this Experiment, and the variations, and improvements and uses of it, though I have divers things lying by me, &c. I shall forbear the mentioning of them here, not thinking it proper to swell the Bulk of this Letter with them.

The next thing we shall take Notice of, in the Transactions communicated by Mr. Boyle, is *Inquiries concerning the Sea*, which with the occasion of their being communicated, is thus. The Publisher of these Tracts knowing, that the Honourable *Robert Boyle*, had not left unconsidered, the Natural History of the Sea, of which Subject the late, and these present Papers have entertained the Reader, as to it's flux and reflux ; He was on this Occasion, instant with that Gentleman to impart to him for Publication, these Heads of Enquiries, he had drawn up, touching that Subject ; which having obtained (though the Author desires, they may be looked unfinished) he thus subjoyns.

What is the proportion of Salt, that is in the Water of differing Seas ; and whether in the same Seas, it be always the same ? and if it be not, how much it differs ?

What is the Gravity of Sea Waters, in reference to fresh Waters, and to one another ? whether it varies not in Summer and Winter, and on other Scores ? and whether in the same Season,

Season, it's Gravity proceeds only from the greater or lesser proportion of Salt that is in it, and not sometimes from other Causes? and what are the different Gravities of Sea Water, according to the Climates?

This Clause containing a difficult *Quere*, and that may seem something odd, Mr. Boyle thinks fit to Note, that having recommended this Matter amongst others, to a Learned Physician, that was Sailing to *America*, and furnished him with a small Hydrostatical Instrument, to observe from time to time the difference of Gravity he might meet with, this Account was returned him, that he found by the Glass, the Sea Water to increase in weight, the nearer he came to the Line, till he arrived at a certain degree of Latitude, as he remembers it was about the 30th. after which, the Water seemed to retain the same specifick Gravity, till he came to *Barbadoes* or *Jamaica*.

What are the Odours, Colours and Tastes observable in Sea Water?

What is the Depth of the Sea in several Places, and the Order of it's Increase and Decrements? and whether the Bottom of the Sea does always rise towards the Shore, unless accidentally interrupted.

Of the Bottom of the Sea, and how it differs from the surface of the Earth, in reference to the Soyl, and evenness or ruffness of the Superficies; and the Stones, Minerals and Vegetables to be found there?

What the figuration of the Seas from North to South, and from East to West, and in the several Hemispheres and Climates?

What

What Communications there is of Seas by Streights and Subterraneous Conveyances?

Of the Motion of the Sea by Winds, and how far Storms reach downwards, towards the bottom of the Sea?

Of the grand Motions of the Bulk or Body of the Sea, especially of the Tides. Their History as to the Nature and Differences, the particulars whereof, says Mr. Boyle, are here admitted, Sr. Robert Morray and Dr. Wallis, having by their more accurate Enquiries about Tides made them needless.

What Power the Sea hath to produce or hasten Putrefaction in some Bodies, and to preserve others, as Wood, Cables, and others that are sunk under it?

Of the Power ascribed to the Sea, to eject dead Bodies, *Succinum*, *Ambergrease*?

Of the shining of the Sea in the Night.

What are the Medicinal Vertues of the Sea, especially against *Hydrophobia*?

What is it's Vertue to manure Land, and what are the Plants that thrive best in Sea Water?

In another Part of the Transactions, Mr. Boyle proposes Enquiries about Mines, which since they are comprized in his General Heads for the Natural History of a Country, we shall not here take further Notice of them; only of some Promiscuous Enquiries briefly about Cold, formerly sent and recommended to Monsieur Hevelius, together with his Answer, of whom the following Character is given, viz. That excellent Promoter of Astronomy and Philosophy, Monsieur Hevelius Consul of Dantzick, who demon-

Inquiries about Cold recommended to Monsieur Hevelius and his Answer.

monstrates so much Zeal for the Advancement of real Knowledg, that he not only promotes it, and improves it by his own Studies, but labours also to incite others to do the same, having already warmed many of the Northern Climate, particularly *Poland*, *Prussia*, *Livonia*, *Sweden* and *Denmark*, into a disposition to be studious, and active in inquiring after such particulars concerning Philosophy, as are recommended from hence, and rendered them very willing to employ themselves in things of that Nature.

The Enquiries sent to *Dantzick* are these.

1. What *Signior Burattini* (an *Italian* Gentleman, Master of the Mint to the King of *Poland*, and reputed a great Master in the Mechanics) hath performed in Diopticks? whether at the present he employs himself, as is related in grinding a *Telescope* of 120 foot long? and if so, what may be the means to make use of, commodiously to handle a *Tube* of that Length.

2. Whether the same hath the Art (as hath been written from *Paris*) to make such *Glass*, as is not at all inferior to that of *Venice* *Glass*, and exceeds any plate of *Glass*, hitherto made there, twice or thrice in bigness?

3. What is the way of making *Pot-ashes* in *Poland*?

4. What is to be observed about *Succinum* or *Amber*? whether it be an Exudation of the Sea? whether it be seen to float upon the Surface of the Sea? whether it be soft when it's first cast on shoar, and what season of the Year, and in what manner it's taken up, &c.

5. What is to be observed in the digging of *Sal Gemma* in *Poland*? what is the depth of the Mines stored with this Salt? what their distance from the Sea? &c.

6. What truth there is in that Relation concerning Swallows, being found in Water, under Waters congealed? And reviving, if they be fished and held to the fire.

7. Whether there be in the *Bodnick Bay* a Whirl-pool, as is related to be in the *Sea* of *Norway*, which is commonly called the *Maal-Scream*? And whether there be any signs, that speak the Communications of those Gulphs by Subterraneous Passages, as the *Jesuit Shichrer* affirms in his *Mundus Subterraneus*. T. 1. p. 246.

8. To what depth the Cold in those parts pierces the Earth and Water.

9. Whether their Watches go slower by the Intense Cold?

10. Whether their Oyls in hard Frost are turned into true, that is hard and brittle Ice?

11. Whether they can freeze there a strong Brine of *Bay Salt*? And a strong Decoction of *Sal Gemme*, or Soot; or a strong Solution of Salt of Tartar; or of Sugar of Lead?

12. Whether they can congeal meer Blood, all the serous Part being severed? Item, *Canary Wine*; the *Lixivium* of Soap-Boylers, and such as are prepared of other Salts; as also the Spirits extracted out of Salts, as Spirit of Vitriol, Nitre, &c.

13. Whether an Intense and lasting Frost makes any Alteration in Quick-silver, exposed very shallow in a flat Vessel?

14. Whether the Purgative Vertues of *Catharticks* be increased or lessened, or even totally destroyed, by a strong and continued Cold?

15. Whether Harts horn thawed, and such like substances using the same Method of Distilling, yield the same Quantity of Liquor, which they used to yield, when not Frozen?

16. What Cold Operates in the Fermentation of Liquors?

17. Whether Birds and Wild Beasts grow white therein Winter, and recover their native Colour in Summer?

18. Whether Colours may be concentrated by a sharp Cold? *E. G.* a strong Decoction of Cochineel in a fit Glass?

19. Whether the Electrical Vertues of Amber, and the Attractive and Directive force of the Magnet, be changed by a vehement Cold?

20. Whether pieces of Iron and Steel, even thick ones, be made brittle by Intense Frost; and therefore Smiths are obliged for Prevention, to give their Iron and Steel Tools a softer Temper?

21. Whether accurate Observations evince, that all Fishes dye in Frozen Waters, if the Ice be not broken? Where it is to be diligently enquired into, whether the Cold it self, or the want of changing or ventilating the Water, or the Privation of Air, be the Cause of the Death of Fishes?

22. Whether any Physicians or Anatomists have enquired by Freezing to Death some Animals (as Rabbits, Pullets, Dogs, Cats, &c.) after what manner it is, that Intense Cold kills Men? Whether they have found any Ice in inward Parts, and if so, in which of them? Whether in the Ventricles of the Brain and Heart, or in the greater Vessels?

To which Queries *Monsieur Hevelius* returns this Answer.

The Enquiries you propos'd to me, I did impart to several of my Learned Friends; but hitherto I have attained an answer but to few particulars. Amongst the rest (*being along with several other Papers*) you'll find a Letter of the Learned *Johannes Schefferus*, Professor in the *Sweedish* University at *Upsall*, wherein he discourges handsomly of several things, being ready to entertain a Literary Commerce with you about such Matters. Touching Amber, I am almost of the same Mind, with him, that it is a kind of fossil Pitch or Bitumen; since it is not only found on the shoar of the *Borussian Sea*, but also digged up in Subterraneous Places, some German Miles distant from the Sea, and not only in Sandy but other Hills of firmer Earth, of which I have seen my self pretty big pieces. Concerning Swallows, I have frequently heard Fishermen affirm, that they have here often fished them out of the Lakes in the Winter, but I have never seen it my self whilst I am writing this, I Received Letters out of *Denmark*, Advertising me, that those two Learned Men, *Thomas* and *Erasmus Bartholin*, do intend shortly to answer the same Queries. Next Winter, if God vouch-

safe me Life and Health, I purpose to make a Journey to *Konings-borg*, where I hope to learn many things, especially about *Amber*.

of the

Transfusion
of Blood.

The next thing that offers it self to our view is, the Method observed in transfusing the Blood out of one Animal into another, which was practised in *Oxford*, by Dr. *Lower*, and Communicated to Mr. *Boyle*, who imparted it to the Royal Society as followeth.

First, take up the Carotidal Artery of the Dog or other Animal, whose Blood is to be transfused into another of the same, or a different kind, and seperate it from the Nerve of the eighth pair, and lay it bear above an Inch, then make a strong Ligature on the upper part of the Artery, not to be untied again; but an Inch below, *Videl.* towards the Heart make another Ligature of a running knot, which may be loosened and fastened as there is occasion. Having made these two knots, draw two threads under the Artery, between the two Ligatures, and then open the Artery, and put in a Quill, and tye the Artery upon the Quill very fast, by those two threads, and stop the Quill with a stick. After this make bare the Jugular Vein in the other Dog about an Inch and a half long, and at each end make a Ligature with a running knot, and in the space betwixt the two running knots, draw under the Vein too threds as in the other; then make an incision in the Vein, and put into it two Quills one in the Descendant Part of the Vein, to receive the Blood from the other Dog, and carry it to the Heart, and the other Quill put into the other Part

of

of the Jugular Vein, which comes from the Head (out of which the second Dogs own Blood must run into Dishes). These two Quills being put in and tyed fast, stop them with a stick, till there be occasion to open them.

All things being thus prepared,tye the Dogs on their sides towards one another so conveniently, that the Quills may go into each other (for the Dogs necks cannot be brought so near, but that you must put two or three Quills more into the first two, to convey the Blood from one to another) after that unstop the Quill that goes down into the first Dogs Jugular Vein, and the other Quill coming out of the other Dogs Artery ; and by the help of two or three other Quills put into each other, according as there shall be occasion, insert them into one another. Then slip the running knots, and immediately, the Blood runs through the Quills, as through an Artery, very impetuously. And immediately, as the Blood runs into the Dog, unstop the other Quill coming out of the upper Part of his Jugular Vein (a Ligature being first made about his Neck, or else his other Jugular Vein being compressed with ones finger) and let his own Blood run out at the same time into Dishes (yet not constantly, but according as you see him able to bear it) till the other Dog begins to cry and faint, and at last fall into Convulsions, and at the last dye by his side.

Then take out both the Quills out of the Dogs Jugular Vein, and tye the running knot fast and cut the Vein asunder (which you may do

do without any harm to the Dog, one Jugular Vein being sufficient to convey all the Blood from the Head and the Upper Parts, by Reason of a large *Anastomasis*, whereby both the Jugular Veins meet about the Larynx) this done, sow up the skin and dismiss him, and the Dog will leap from the Table and shake himself, and run away, as if nothing ailed him.

And this I have tryed several times, before several in the Universities, but never yet upon more than one Dog at a time, for want of leisure, and convenient supplies of several Dogs at once. But when I return I doubt not but to give you a fuller Account, not only by bleeding several Dogs into one, but several other Creatures into one another as you did propose to me before you left *Oxford*, which will be very easie to perform; and will afford many pleasant and perhaps not unnsful Experiments.

But because there are many Circumstances necessary, to be observed in the performing of this Experiment; and that you may better direct any one to do it, without any Danger of killing the other Dog, that is to receive the others Blood, I will mention two or three.

First, That you fasten the Dogs at such a convenient Distance, that the Vein or Artery be not stretched; for then being contracted they will not admit or convey so much Blood.

Secondly, That you constantly observe the Pulse beyond the Quill in the Dogs Jugular Vein (which it acquires from the Impulse of the Arterious Blood). For if that fails, then it is a
sign

sign the Quill is stopped by some coagulated Blood, so that you must draw out the Arterial Quill from the other, and with a Probe open the Passage again in both of them, that the Blood may have it's free Course again. For this must be expected, when the Dog that bleeds into the other, hath lost much Blood, his Heart will beat very faintly, and then the impulse of Blood being weaker, it will be apt to congeal the sooner, so that at the latter end of the Work, you must draw out the Quill often, and clear the Passage, if the Dog be faint hearted as some are, though some stout fierce Dogs will Bleed freely and uninterruptedly, till they are convulsed and dye. But to prevent this trouble, and make the Experiment certain, you must Bleed a great Dog into a little one, or a Mastiff into a Cur, as I once tryed, and the little Dog bled out at least double the Quantity of his own Blood, and left the Mastiff dead upon the Table, and after he was untied, he ran away and shook himself, as if he had been only thrown into Water. Or else you may get three or four several Dogs prepared in the same manner, and when one begins to fail and leave off bleeding, administer another, and I am confident one Dog, will receive all their Blood (and perhaps more) as long as it runs freely, till they are left almost Dead by turns; provided that you let out the Blood proportionably, as you let it go into the Dog that is alive.

Thirdly, I suppose the Dog that is to bleed out into Dishes, will endure it the better, if the Dogs that are to be administered to supply the Blood

Blood be of near an equal Age, and fed alike the Day before, that both their Bloods may be of a near Strength and Nature.

There are many things I have observed upon Bleeding Dogs to Death, which I have seen since your departure from *Oxford*, whereof I shall give you a Relation hereafter; in the mean time since you were pleased to mention it to the *Royal Society*, with a promise to give them an Account of this Experiment, I could not but take the first Opportunity to clear you from that Obligation, &c.

So far this Letter, the Prescriptions whereof having been carefully observed, by those who were employed to make the Experiment, have hitherto been attended with good Success; and that not only upon Animals of the same Species (as two Dogs first and then two Sheep) but also upon some of very different Species (as a Sheep and a Dog, the former Emitting the other Receiving.

Note, only, That instead of a Quill, a small crooked thin Pipe of silver or Brass, so slender that the one end may enter into a Quill, and having at the other end, that is to enter into the Vein and Artery, a small knob, for the better fastening them to it with a Thread, will be much fitter than a streight Pipe or Quill, for this Operation; for so they are much more easy to be managed.

It's intended, that these Tryals shall be prosecuted to the utmost variety, the Subject will bear, as by exchanging the Blood of Old and Young; Sick and Healthy, Hot and Cold, Fierce and Fearful, Tame and Wild Animals, &c. and

and that not only of the same but of differing kinds. For which end, and to improve this Noble Experiment, either for Knowledge or Use or both, some Ingenious Men have already proposed considerable Tryals and Enquiries, —For the present we shall only subjoyn some.

Considerations about this kind of Experiment.

First, It may be considered in them, that the Blood of the Emittent Animal, may after a few Minutes of Time, by it's Circulation, mix and run out, with that of the Recipient. Wherefore to be assured in these Tryals, that all the Blood of the Recipient is run out, and none left in him, but the adventitious Blood of the Emittent, two or three or more Animals (which was also hinted in the Method above) may be prepared and administred to bleed them all out into one.

Secondly, It seems Rational to guess afore-hand, that the exchange of Blood, will not alter the Nature or Dispositions of the Animals, upon which it shall be practiced: though it may be thought worth while, for satisfaction and certainty, to determin that Point by Experiment. The Case of the exchange of the Blood of Animals, seems not like that of *Grafting*, where the *Cyons* turns the Sap of the *Stock*, grafted upon, into it's Nature; the Fibres of the *Cyons* so framing the juice, which passes from the *Stem* to it, as thereby to change it into

to that of the Cyons, whereas in this transfusion there seems to be no such Percolation of the Blood of Animals, whereby that on the one, should be changed into the Nature of the other.

Thirdly, The most probable Use of this Experiment may be conjectured to be, that one Animal may live with the Blood of another, and consequently, that those Animals that want Blood, or have corrupt Blood, may be supplied from others, with a sufficient Quantity, and of such as is good, provided the Transfusion be often repeated, by reason of the quick expence that is made of the Blood.

Mr. Boyle's
Proposals
to Dr.
Lower.

Having thus taken Notice of Dr. *Lower's* Letter to Mr. *Boyle*, and his Thoughts upon it, we shall in the next place insert, some Tryals proposed by Mr. *Boyle* to Dr. *Lower*, to be made by him, for the improvement of transfusing of Blood out of one live Animal into another.

The following Queries and Tryals, says the Author of the Transactions, were written long since, and read about a Month ago in the *Royal Society*; and do now come forth against the Authors Intention, at the earnest desire of several Learned Persons, and particularly of the worthy *Doctor*, to whom they were addressed; who thinks they may excite and assist others in a Matter, which to be well prosecuted, will require many Hands. At the reading of them, the Author declared, that of divers of them, he thought he could foresee the events, but yet judged it fit not to omit them, because the importance of the Theories they may give Light to, may make

make the Tryals recompence the Pains, whether the success favour the Affirmative or Negative of the question, by enabling us to determine the one or the other upon surer grounds, than we could otherwise do. And this Advertisement he desires may be applyed to those other Papers of his, that consist of Queries or proposed Tryals.

The Queries themselves are,

First, Whether by this way of transfusing of Blood, the disposition of individual Animals of the same kind, may not be much altered. As whether a fierce Dog, by being quite new stocked with the Blood of a cowardly Dog, may not become more tame, and *vice versa*, &c?

Secondly, Whether immediately upon the unbinding of a Dog, replenished with adventitious Blood, he will know and fawn upon his Master, and do the like Customary things as before? and whether he will do such things better or worse, at sometime after the Operation?

Thirdly, Whether those Dogs that have *Peculiarities*, will have them either abolished, or at least much impaired by Transfusion of Blood? as whether the Blood of a Mastiff, being frequently transfused into a Bloodhound, or a Spaniel, will not prejudice them in point of scent?

Fourthly,

Fourthly, Whether acquired habits will be destroyed or impaired by this Experiment? as whether a Dog taught to fetch and carry, or to dive after Ducks, or to Set, will after frequent and full recruits of the Blood of Dogs unfit for those Exercises, be as good at them as before?

Fifthly, Whether any considerable change is to be observed in the Pulse or Urin, and other Excrements of the recipient Animal, by this Operation, or the quantity of his sensible Transpiration?

Sixthly, Whether the Emittent Dog, being full fed at such a distance of time before the Operation, that the Mass of Blood may be supposed to abound with Chyle, the recipient Dog, being before hungry, will lose his appetite, more than if the emittent Dog's Blood had not been so Chylous? and how long, upon a vein opened of a Dog, the admitted Blood will be found to retain Chyle?

Seventhly, Whether a Dog may be kept alive without eating, by the frequent injecting of the Chyle of another, taken freshly from the receptacle into the Veins of the recipient Dog?

Eighthly, Whether a Dog that is sick of some Disease, chiefly imputable to the Mass of Blood, may be cured by exchanging it for that of a sound Dog? And whether a sound Dog, may receive such Diseases from the Blood of a sick Dog, as are not otherwise of an infectious Nature?

Ninthly, What will be the Operation of frequently stocking (which is sensible enough) an old and feeble Dog with the Blood of young ones,

as to liveliness, dulness, drowsiness, squeamishness, &c. or *vice versa*?

Tenthly, Whether a small young Dog, by being often fresh stocked, with the Blood of a young Dog of a larger kind, will grow bigger than the ordinary size of his own kind?

Eleventhly, Whether any medicated Liquors may be injected together with the Blood into the recipient Dog? and in case they may, whether there will be any considerable difference found, between the separations made on this Occasion, and those, which would be made, in case such medicated Liquors had been injected, with some other Vehicle? or alone, or taken in at the Mouth?

Twelfthly, Whether a purging Medicine given to the emittent Dog, a while before the Operation, the recipient Dog will be thereby purged, and how? which Experiment may be hugely varied.

Thirteenthly, Whether the Operation may be successfully practiced, in case the injected Blood be, that of an Animal of another Species, as of a Calf into a Dog, &c. and of a Cold Animal, as of a Fish or Frog, or Tortoise, into the Vessels of a hot Animal, and *vice versa*?

Fourteenthly, Whether the Colour of the Hair or Feathers of the recipient Animal, by the frequent repeating of this Operation, will be changed into that of the emittent.

Fifteenthly, Whether by frequently transfusing into the same Dog the Blood of some Animal of another Species, something further and more tending to some degree of a change of Species, may be effected, at least in Animals

mals near of kin ? as Spaniels and setting Dogs, Irish Grey-hounds and ordinary Grey-hounds, &c.

Sixteenthly, Whether the Transfusion may be practised upon pregnant Bitches, at least at certain times of their Gravitation ? and what Effect it will have upon the Whelps ?

There are some other Queries proposed, as the weighing of the emittent Animal, before the Operation, that making Abatement, for the Effluvioms, and for the Excrements if it voids any, it may appear how much Blood it really looses ; to which were annexed several others not so fit to be perused, but by Physitians, and therefore here omitted.

Dr. Wallis's Letter to Mr. Boyle.

The next thing which occurs to our Observation, is a Letter to Mr. Boyle from Dr. Wallis, concerning his teaching a Person dumb and deaf to speak, and to understand a Language, with the success thereof. The Letter is as followeth,

Sir,

I did acquaint you a while since, that besides the consideration I had in hand, I had undertaken another Task, to teach a Person dumb and deaf to speak, and to understand a Language ; of which if he could do either, the other would be more easy ; but his knowing neither, makes both harder. And though the former may be thought the more difficult, the later may perhaps require as much of time. For if a considerable time be requisite, for him that can speak one, to learn a second Language ; much more for him that knows none, to learn the first.

I told you in my Last, that my *Mute* was now at least *semi vocalis*, whereof, because you desire a more particular Information, I thought my self obliged to give you this brief Account of the whole Affair, that you may at once perceive, as well upon what considerations I was induced to attempt that Work, and what I did propose to my self as feasible therein, as what success hath hitherto attended that Essay.

The Task it self consists of two very different Parts, each of which doth render the other more difficult; for besides that which appears upon the first view, to teach a Person who cannot hear, to pronounce the sound of Words, there is that other, of teaching him to understand a Language, and know the signification of those Words, whether spoken or written, whereby he may both express his own Sense, and understand the Thoughts of others, without which later, that former were only to speak like a Parrot, or to write like a Scrivener; who understanding no Language but English, transcribes a piece of Latin, Welsh or Irish; or like a Printer of Greek, or Arabick, who knows neither the sound nor signification of what he Printeth.

Now, though I did not apprehend either of these impossible, yet that each of them, doth render the other more hard, was so obvious, as that I could not be ignorant of it; for how easily the Understanding of a Language is attained, by the benefit of Discourse, we see every Day; not only in those, who knowing one Language already, are now to learn a second; but (which does more resemble the present case) in

in Children, who as yet knowing none, are now to learn their first Language.

For it is very certain, that no two Languages can be so much different the one from the other, but that the Knowledge of the one, will be subservient to the gaining of the other ; not only because there is now a common Language, wherein the Teacher may interpret to the Learner, the signification of those Words and Notions, which he knows not, and express his own Thoughts to him; but likewise, which is very considerable, because the common Notions of Language, wherein all or most Languages do agree, and also so many of the Particularities thereof, as are common to the Language he knows already, and that which he is to learn (which will be very many) are already known; and therefore a considerable Part already dispatched, of that Work, which will be necessary for the teaching of a first Language to him, who as yet knows none.

But to this disadvantage (of teaching a first Language) when that deafness is superadded, it must augment the difficulty ; since it is manifestly evident from Experience, that the most advantageous way of teaching a Child his first Language, is that of perpetual Discourse, not only what is particularly addressed to himself, as well in pleasing divertisements, or delightful sportings (and therefore insinuates itself, without any irksom or tedious Labour) as what is directly intended for his more serious Information: But that Discourse also, which passes between others, where without Pains or Study, he takes Notice of what actions in the speaker

do

do accompany such Words, and what Effects they do produce in those to whom they are directed, which does by degrees insinuate the Intendments of those Words.

And as that Deafness makes it the more difficult to teach him a Language, so on the other hand, that want of Language, makes it more hard to teach him how to speak, or to pronounce the Sounds. For there being no other way to direct his Speech than by teaching him, how the Tongue, the Lips, the Palate, and other Organs of Speech, are to be applyed and moved in the forming of such Sounds as are required; to the end, that he may, by Art, pronounce those Sounds, which others do by Custom, they know not how, it may be thought hard enough to express in Writing, even to one who understands it very well, those very nicities and delicacies of Motion, which must be observed (though we heed it not) by him, who without help of his Ear to guide his Tongue, shall form that Variety of Sounds, we use in speaking; many of which Curiosities are so nice and delicate, and the difference in forming those Sounds is so very subtile, that most of our selves, who pronounce them every Day, are not able, without a very serious consideration, to give an Account, by what Art or Motion our selves form them, much less to teach another how it is to be done. And if by writing to one who understands a Language, it be thus difficult to give Instructions how, without the help of hearing, he may utter those Sounds, it must needs increase the difficulty, when there is no other Language to express it in, but that of dumb signs. y These

These difficulties (of which I was well aware,) did not yet so far discourage me from that Undertaking, but that I did still conceive it possible, that both Parts of this Task might be effected.

As to the first of them, though I did not doubt, but that the Ear doth as much guide the Tongue in speaking, as the Eye doth the Hand in Writing, or playing on the Lute; and therefore those who by accident do wholly lose their Hearing, loose also their Speech, and consequently become Dumb, as well as Deaf (for it is in a manner the same difficulty, for one that hears, not to speak well, as for him that is blind, to write a fair hand;) yet since we see, that it is possible for a Lady to attain so great a Dexterity, as in the dark to play on the Lute, though to that variety of nimble Motions, the Eyes direction, as well as the judgment of the Ear, might seem necessary to guide the hand; I did not think it impossible, but that the Organs of Speech might be taught to observe their due Postures, though neither the Eye behold their Motion, nor the Ear discern the Sound they make.

And as to the other, that of Language might seem yet more possible. For since that in Children, every Day, the Knowledge of Words, with their various Constructions and Significations, is by degrees attained by the Ear; so that in a few Years, they arrive to a competent ability of expressing themselves in their first Language, at least as to the more usual Parts and Notions of it; why should it be thought impossible, that the Eye (though

with

with some disadvantage) might as well apply such complications of Letters or other Characters, to represent the various Conceptions of the Mind, as the E. r, a like Complication of Sounds ? For though as things now are, it be very true, that, Letters are with us, the immediate Characters of Sounds, as those Sounds are of Conceptions ; yet there is nothing in the Nature of the thing it self, why Letters and Characters might not as properly be applyed to represent immediately, as by the intervention of the Sounds, what our conceptions are.

Which is so great a Truth (though not so generally taken Notice of) that it is practiced every Day, not only by the *Chineses*, whose Language is said to be made up of such Characters as to represent things and notions, independent on the Sounds of the Words ; and is therefore differently spoken by those who differ not in the writing of it (like as what in figures we write, 1, 2, 3. for one, two, three ; a *French* Man for Example, reads, *Un, Deux, Trois* :) But in part also amongst our selves ; as in the numerals Figures now mentioned, and many other Characters of Weights and Metals, used indifferently by divers Nations, to signify the same Conceptions, though expressed by a different Sound of Words : And more frequently in the Practice of specious Arithmetick, and Operations of *Algebra*, expressed in such Symbols, as so little need the Intervention of Words to make known their meaning, that when different Persons come to express, in Words, the Sense of those Characters, they will as little

agree upon the same Words, though all express the same Sence, as two Translators of one and the same Book into another Language.

And, though I will not dispute the practical possibility of introducing an Universal Character, in which all Nations, though of different Speech, shall express their common Conceptions; yet, that some two or three, or more Persons, may by consent, agree upon such Characters, whereby to express to each other their Sence in Writing, without attending the Sound of Words, is so far from an Impossibility, that it must needs be allowed to be very feasible, if not facile. And, if it may be done by new invented Characters, why not as well by those already in use? which, though to those that know their common Use, they may signify Sounds; yet to those that know it not, or do not attend it, may be as immediately applyed to signify Things or Notions, as if they signified nothing else: And consequently, so long as it is purely arbitrary, by what Characters to express such a Thing or Notion; we as well make Use of that Character or Collection of Letters, to express the Thing to the Eye of him that is Deaf, by which others express the Sound or Name of it to those that hear. So that indeed, that shall be to him a real Character, which expressed to another a Vocal Sound; but signifyeth to both the same Conception, which is to understand the Language.

To these fundamental Grounds of possibility in Nature, I am next to add a Consideration, which made me think it morally impossible, that it's not impossible to succeed in Practice.

And

And because I am now giving an Account to one, who is so good a Friend to Mathematicks, and Proficient therein, I shall not doubt, but this consideration, will have the force of a great Swasive. Considering therefore, from how few and despicable Principles, the whole Body of Geometry, by continual consequence is enforced; if so fair a Pile, and curious Structure may be raised, and stand fast upon so small a bottom, I could not think it incredible, that we might attain some considerable success in this design, how little soever we had at first to begin upon; and from those little Actions and Gestures, which have a kind of Natural Significancy, we might, if well managed, proceed gradually to the explication of a compleat Language; and withal, direct to those Curiosities of Motion and Posture in the Organs of Speech, requisite to the formation of a Sound desired, and so to effect both Parts of what we intend.

My next Inducement to undertake it, was a consideration of the Person (which in a work of this Nature, is of no small concernment) who was represented to me as very ingenious and apprehensive (and therefore a fit Subject to make an Essay upon;) and so far at least a Mathematician, as to draw Pictures; wherein I was told, he had attained some good ability, which did induce me to believe, that he was not incapable of the Patience, which will be necessary to attend the Curiosity of those little varieties in the Articulation of Sounds; being already accustomed to observe and imitate those little Niceties in a Face, without which, it is not possible to draw a Picture well.

I shall add this also, that once he could have spoken, though so long ago, that I think he does scarce remember it. But having by Accident, when about five Years of Age, lost his hearing, he consequently lost his Speech also, not all at once, but by degrees, in about half a Years time, which though it does confirm what I was saying but now, how needful it is for the Ear to guide the Tongue in speaking (since that habit of speaking, which was attained by hearing, was also lost with it,) and might therefore discourage the undertaking; yet I was thereby very much secured, that his want of Speech was but a consequent of his want of hearing, and did not proceed originally from any Indisposition in the Organs of Speech, to form those Sounds. And though the neglect of it in his younger Years, when the Organs of Speech being yet tender, were more pliable, might now render them less capable of the accurateness, which those of Children attain unto (whereof we have daily Experience; it being found very difficult, if not impossible, to teach a Foreigner well in Years, the accurate pronouncing of that Sound or Language, which in his tender Years he had not learned :) yet if he can attain to speak but so well as a Foreigner at his Years may learn to speak English, what shall be further wanting to that accurateness, which a Native from his Childhood attains to, may by an indifferent Estimate, be very well dispensed with.

Having thus acquainted you with those considerations, which did induce me to attempt it; lest you may think I build too confidently thereupon,

upon, and judge me guilty of too much vanity, in promising my self, a greater success than can in Reason be hoped for; it will next be necessary, to give you some Account, what measure of success I might propose to my self as probable, in such an Undertaking.

And as to the first part of it, that of speaking; though I did believe, that much more is to be effected, than is commonly thought feasible, and that it was possible for him so to speak, as to be understood; yet I cannot promise my self, that he shall speak so accurately, but that a critical Ear may easily discern some failures, or little differences, from the ordinary Tone or Pronunciation of other Men (since that we see the like every Day, when not Foreigners only, but those of our own Nation in the remoter Parts of it, can hardly speak so accurately, as not to discover a considerable difference, from what is the common Dialect or Tone at *London*.) And this not only upon the Consideration last mentioned (concerning the Origin of Speech less pliable to those Sounds, to which they were not from the first accustomed,) but especially upon that other consideration, concerning the Ears usefulness, to guide and correct the Tongue. For as I doubt not, but that a Person, who knows so well how to write, may attain by Custom, such a dexterity, as to write in the dark tolerably well, yet it could not be expected, that he should perform it with the same Elegancy, as if he saw the Motions of his Hand, so neither is it reasonable to be expected, that he who cannot hear, though he may know how to speak truly, should yet per-

form it so accurately, as if he had the advantage of his Ears also.

Nor can I promise, nor indeed hope, that how accurately soever he may learn to speak, he should be able to make so great Use of it as others do. For since, that he cannot hear what others say to him, as well as express his own Thoughts to them; he cannot make use of it in Discourse as others may. And though it may be thought possible, that he may in time discern, by the Motion of the Lips, visible to the Eye, what is said to him (of which I am loth to deliver a positive Judgment, since much may be said conjecturally both ways.) yet this cannot be expected, till at the least he be so perfectly Master of the Language, as that by a few Letters known, he may be able to supply the rest of the Word; and by a few Words, the the rest of the Sentences, or at least the Sence of it, by a probable Conjecture; as when we decypher Letters written in Cypher. For that the Eye can actually discern all the varieties of Motion in the Organs of Speech, and see what Sounds are made by those Motions, of which many are inward, and are not exposed to the Eye at all, is not imaginable.

But as to the other Branch of our design, concerning the understanding of a Language, I see no Reason at all to doubt, but that he may attain this, as perfectly as those that hear; and that allowing the like time and exercise as to other Men, is requisite to attain the Perfection of a Language, and the Elegancy of it, he may understand as well, and write as good Language as other Men; and abating only what

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does directly depend upon Sound, as Tones, Cadences, and such *Punctilios*, no what inferior to what he might attain to, if he had his hearing as others have. And what I speak of him in particular, I mean as well of any other ingenious Person in his Condition, who I believe may be taught to use their Book and Pen, as well as others, if a right course be taken to that Purpose.

To tell you next, what Course I have hitherto used toward this design, it will not be so necessary; for should I descend to particulars, it would be too tedious, especially since they are to be used very differently, and varied as the present Case and Circumstance do require. And as to the General way, it is sufficiently intimated already.

As to that of Speech; I must first, by the most significant signs I can, make him to understand, in what Posture and Motion I would have him to apply his Tongue, Lips, and other Organs of Speech, to the forming such a Sound as I direct. Which if I hit right, I confirm him in it, if he miss, I signify to him in what he differed from my directions, and to what circumstances he must attend to mend it. By which means, with some Tryals, and a little Patience, he learns first one, then another Sound, and by frequent Repetitions, is confirmed in it; or if he chance to forget, recovers it again.

And for this Work I was so far prepared before hand, that I had heretofore, upon another Occasion, in my Treatise *de Loquela*, prefixed to my Grammar for the English Tongue, considered

considered very exactly, what few attend to, the accurate formation of all Sounds in speaking, at least as to our own Language, and those I knew; without which it were in vain to set upon this Task. For if we do not know, or not consider, how we apply our own Organs in forming those Sounds we speak, it is not likely we shall this way, teach another.

As to that of teaching him the Language, I must, as Mathematicians do from a few Principles first granted, from that little stock (that we have to begin upon) of such Actions and Gestures, as have a kind of natural significance, or some few signs, which himself had before taken up to express his Thoughts, as well as he could, proceed to teach him somewhat else; and so by steps to more and more: And this so far as well as I can, in such methods, as that what he knows already, may be a step to what he is next to learn; as in Mathematics, we make use of, not only Principles, but Propositions already demonstrated, in the demonstration of that, that followeth.

It remains now for the perfecting the Account, which at present you desire of me, only to tell you, what progress we have already made, which had not your desires commanded from me, I should have respited a while longer, till I might have made it somewhat fuller.

He hath been already with me, somewhat more than two Months, in which time, though I cannot be thought to have finished such a Work; yet the success is not so little, as to discourage the Undertaking, but as much as I could hope for in so short a time, and more than

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I could expect. So that I may say, the greatest difficulty of both Parts being almost over; what remains, is little more than the Work of Time and Exercise. There is hardly any Word, which with deliberation he cannot speak; but to do it accurately and with expedition we must allow him the Practice of some considerable Time, to make it familiar to him.

And as to the Language, though it were very indifferent to him, who knew none, which to begin withal; yet since it is out of question, that *English* to him, is like to be the most useful and necessary, it was not adviseable to begin with any other: For though he can pronounce *Latin* with much more ease (as being less perplexed with a multitude of concurring Consonants) yet this is a consideration of much less consideration than the other.

To this therefore, having applyed himself, he hath already Learned a great many Words, and I may say, a considerable part of the *English*, as to the Words of the most frequent Use. But the whole Language being so copious, tho' otherwise easy, will require a longer time to perfect, what he hath begun.

And this *Sir*, is the full History of our Progress hitherto, if you shall hereafter esteem our future success, worthy your taking Notice of, You may command that, or what else is within the Power of,

Sir,

Your Honours very Humble

Servant,

John Wallis.

The

Oxford,

March the

14th. 1662.

Observations
about
shining
Flesh.

The next thing which offers it self to our Notice, is some Observations about shining Flesh, made by the Honourable *Robert Boyle*, and by way of Letter addressed to the Publisher, and presented to the Royal Society, as follows,

Yester-night, when I was about to go to Bed, an *Amannensis* of mine, accustomed to make Observations, informed me, that one of the Servants of the House, going on some Occasion into the Larder, was frightened by something Luminous, that she saw (notwithstanding the darkness of the Place, where the Meat had been hung up before.) Whereupon suspending for a while my going to rest, I presently sent for the Meat into my Chamber, and caused it to be placed in a corner of the Room, capable of being made considerable dark, and then I plainly saw, both with wonder and delight, that the joynt of Meat, did in several places shine like rotten Wood, or stinking Fish, which was so uncommon a sight, that I presently thought of inviting you to be a sharer in the Pleasure of it. But the late hour in the Night, did not only make me fear to give you too unseasonable a trouble, but being joyned with a great Cold I had got that Day, by making tryal of a new Telescope, you saw, in a windy Place, I durst not sit up long enough to make all the Tryals I thought of, and judged the Occasion worthy of. But yet, because I effectually resolved to employ the little time I had to spare in making such Observations and Tryals, at the Accommodations, I could procure at so inconvenient an hour would enable me, I shall here give you a brief Account of the chief

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Circumstances and *Phanomena*, that I had opportunity to take Notice of.

First, Then I must tell you, that the Subject we discourse of, was a neck of Veal, which as I learnt by Inquiry, had been bought of a Country Butcher the Tuesday preceding.

Secondly, In this one piece of Meat, I reckoned distinctly, about twenty several Places, that did all of them shine, though not all of them alike, some of them doing it, but very faintly.

Thirdly, The bigness of these Lucid Parts was differing enough, some of them being as big as the Nail of a Man's middle Finger, some few bigger, and most of them less. Nor were their Figures at all more Uniform, some being inclined to a round, others almost oval, but the greatest Part of them very irregularly shaped.

Fourthly, The Parts that shone most, which it was not so easie to determine in the dark, were some gristly or soft Parts of the Bones, where the Butchers Cleaver had passed; but these were not the only Parts that were Luminous; for by drawing to and fro the *Medulla Spinalis*, we found that a part of that also did not shine ill: And I perceived one Place in a Tendon to afford some Light, and *Lastly*, three or four Spots in the fleshy Parts, at a good distance from the Bones were plainly discovered by their own Light; though that were fainter than in the Parts above mentioned.

Fifthly, When all these Lucid Parts were surveyed together, they made a very Splendid shew, but it was not so easy, because of the moistness
and

and grossness of the Lump of Matter, to examine the Degree of their Luminousness, as it is to estimate that of Glow-worms, which being small and dry Bodies, may be conveniently laid in a Book, and made to move from one Letter or Word to another. But having by good Fortune by me the Curious Transactions of this Month, I was able to apply that Flexible Paper to some of the more resplendent Spots, that I could plainly read divers consecutive Letters of the Title.

Sixthly, The Colour that accompanied the Light was not in all the same, but in those which shone liveliest, it seemed to have such a fine greenish blew, as I have divers times observed in the Tails of Glow-worms.

Seventhly, But notwithstanding the vividness of this Light, I could not by the Touch discern, the least degree of heat in the Parts, whence it proceeded, and having put some Marks on one or two of the more shining places, that I might know them again when brought to the Light, I applyed a sealed Weather-Glass, furnished with tinted Spirit of Wine, for a pretty while, and could not satisfy my self, that the shining parts did at all sensibly warm the Liquor: But the Thermoscope, though good in it's kind, being not fitted for such nice Experiments, I did not build much upon that Tryal.

Eighthly, Notwithstanding the great Number of Lucid Parts in this neck of Veal, yet neither I, nor any of those that were about me, could perceive by the smell, the least degree of stink, whence to infer any Putrefaction; the
meat

meat being Judged very fresh and well Conditioned and fit to be dressed.

Ninthly, The Floor of the Larder, where this meat was kept, is almost a Story lower than the level of the Street, and it's divided from the Kitchen, but by a Partition of Boards, and is furnished but with one Window, which is not great and looks toward the Street, which lyes Northward from it.

Tenthly, The Wind as far as we could observe it, was then at South west, and blustering enough. The Air by the Sealed Thermoscope appeared hot for the Season. The Moon now past it's last quarter. The Mercury in the Barometer stood at $29 \frac{1}{6}$ Inches.

Eleventhly, We cut off with a knife one of the Luminous Parts, which proved to be a tender Bone, and being about the thickness of a half Crown piece, appeared to shine on both sides, but not equally; and that Part of the Bone whence it had been cut off, continued, joyned to the rest of the neck of Veal, and was seen to shine, but nothing near so vividly as the Part we had taken off did before.

Twelfthly, To try, whether I could obtain any Juice or moist Substance from this, as I have several times done from the Tails of Glow-worms; I rubbed some of the softer and more Lucid Parts (which I caused to be cut off, as dexterously as I could) upon my hand, but I did not at all perceive any Luminous moisture was thereby imparted; though the Flesh seemed by that Operation to have lost some of it's Light.

Thirteenthly,

Thirteenthly, I caused also a piece of shining Flesh to be compressed betwixt two pieces of Glass, to try, how well the contexture of it would resist that external force; but I did not find the Light thereby extinguished during the short time I could allot to the Experiment.

Fourteenthly, But supposing, that high rectified Spirit of Wine, might so alter the Texture of the Body it permeated, as to destroy it's faculty of shining, I put a Luminous peice of Veal into a Chrystalline Phial, and pouring on it a little pure Spirit of Wine, that would have burned all away, after I had shaken them together, I laid by the Glass, and in about a quarter of an hour or less, I found that the Light was vanished.

Fifteenthly, But Water would not so easily quench our seeming Fires; for having put one of them into a China Cup, and almost filled it with Cold Water, the Light did not only appear perhaps undiminished, through that Liquor, but above an hour after was vigorous enough not to be eclipsed by being looked upon at no great Distance from a burning Candle, that was none of the smallest, and probably the Light would have been seen much longer, if we could have afforded to watch out it's Duration.

Sixteenthly, Whilst these things were doing, I caused the Pneumatical Engine to be prepared in a Room without Fire (that the Experiment might be tryed in greater Degree of Darkeness) and having conveyed one of the largest Luminous pieces into a small Receiver, we caused the Candles to be put out, and the Pump to be

be plyed in the Dark ; but the diminution of Light, after the Pump seemed to have been employed for a competent while, appeared so inconsiderable (whether because our Eyes had leasure to be fitted to that dark place, or for what other Cause soever,) that I began to suspect that the Instrument, having been managed in the Dark, had leaked all the while ; wherefore causing the Lights to be brought in, and a Mercurial Gauge to be put into the Receiver, when we was sure that this Glass was well cemented on to the Engin, the Candles being removed, the Pump was set a work again, and then opening my Eyes, which I had kept closed against the Light of the Candles, I could perceive, upon the gradual withdrawing of the Air, a discernable and gradual lessening of the Light, which yet was never brought quite to disappear (as I long since told you the Light of rotten Wood and glow Worms had done) 'or to be so near vanishing, as one would have expected ; though upon the bringing in of the Candles again, it appeared by the Gage, that the Pump had been diligently applied. But the Room being once again darkened, by the hasty increase of Light, that had disclosed it self in the Veal, upon this letting in of the Air to the exhausted Receiver, it appeared more manifestly than before, that the Decrement, though but slowly made, had been considerable. This Tryal we once more repeated, with a not unlike success ; which though it convinced us, that the Luminous Matter of our included Body, was more vigorous or tenacious, than that of most other shining Bodies ;

Bodies; yet it left us some doubts, that the Light would have been much more impaired, if not quite made to vanish, if the Subject of it could have been kept long enough in our exhausted Receiver. But the unseasonable time of the Night reducing me at the length to go to bed, I could not stay to prosecute this or any other Tryal.

Seventeenthly, Only whilst I was undressing, this further Observation occurred, that supposing there might be in the same Larder, more Joynts of the same Veal than one, innobled with this shining faculty, it was found, that a Leg of Veal, which was brought into my Chamber, had some shining Places in it, tho' they were but very few and faint in comparison of those, that were conspicuous in the above-mentioned Neck.

Eighteenthly, What further *Phænomena* this Morning might have afforded me, I cannot tell, having been hastily called up, before day for a Neice, that I am very justly and exceedingly concerned for, who was thought to be upon the point of Death, and whose almost gasping Condition, had too much affected and imployed me, to leave me any time for Philosophical Entertainments, that require a calm, if not a pleased Mind. Only this I took Notice of, because the Observation could not cost me a Minute of an hour; that whilst they were bringing me Candles to rise by, I looked upon a clean Phial, that I had laid upon the bed by me, after a piece of our Luminous Veal had been included in it, and found it to shine vividly at that time, which was between four
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and five a Clock this Morning, since when I have made no Observation or Tryal.

Poscript.

Nineteenthly, Near two Days after I had made the fore-mentioned Observations, those horrid Symptoms of my Neice's Disease, that had so much alarmed the Physitians and me, being through God's Goodness considerably abated, I began to resume the thoughts of the shining Veal, and though having, in the hurry I was in, forgotten to take any Order about it, I found it was already disposed of; yet the piece I lately mentioned to have been included in a Phial, being preserved in it, I looked upon it the third day, inclusively, after we had observed the meat 'twas cut off from, to be Luminous, and I found it to shine in the dark as vigorously as ever. The fourth day, it's Light was also conspicuous, so that I was able in a dark corner of the Room to shew it even in the day time, to three or four ingenious Physitians all of them, save one, Members of the *Royal Society*; and I presume, I need not remind you, that the following Night, I invited you to be Spectator of it, though before that time, the Light had begun to decay, and the offensive smell to grow somewhat strong; which seems to argue, that the Disposition, upon whose Account our Veal was Luminous, very well consisted both with it's being and it's not being in a State of Putrefaction, and consequently

quently is not likely to be derived meerly from one or the other. The fifth day in the Morning, looking upon it when I awaked, and before the Curtains were opened, it seemed to shine better than it had done the day preceding. The same Night also it was manifest enough, though not vivid in the dark. When I awaked the sixth day, in the Morning after the Sun was risen, I could within the Curtain perceive a glimmering Light. But the seventh day, which was yesterday, I could not late at Night discern any Light at all.

You saw too much in what a Condition I was, when you did me the favour to visit me, to expect that I should presume to entertain you, with any Speculations about the Cause of these unusual Apparitions of Light. It's true indeed, that in some Notes, I formerly mentioned to you, I endeavoured to make it probable, that whether Light depends upon a peculiar kind of Impulse, propagated through a transparent Medium, or upon a Diffusion of extremely little Parts of some other Corporeal Agent; whatever the Efficient be, the Effect is produced in a Mechanical way. But though I had these Papers by me, yet to determin what peculiar kind of Motions or other Operations Nature really employed in the Production of Light, which seemed not clearly (by what I shall presently note) referable either to the particular and settled Constitution of the Animals, whose Flesh shined (as in our Glow-worms, and some *American Flies*;) or to that Intestinal and Unusual Motion of the Parts, that Causes or Accompanies Putrefaction in rotten Wood

or Fishes ; since upon the first and liveliest appearance of the Light, there was not any (at least, that could be taken Notice of by the Senses) : To determin this, I say, it seemed to me so difficult a Task, that I shall willingly leave the Solution of such Abstruse *Phænomena*, as some of ours unattempted ; especially since I may, God permitting, make an Historical Mention of them the day after to Morrow, at the Meeting of the *Royal Society* ; where I doubt not much more, and more will be said and considered, than I have Vanity to think my self capable of offering, only, for the prevention of some needless conjectures, to which without this previous Advertisement, one might upon plausible grounds indulge, I shall in the meanwhile Add and Conclude with one Observation more, which may possibly take off our Thoughts from striving to deduce the shining of our Veal from the peculiar Nourishment or Constitution or Properties of that Individual Calf, whose Flesh, &c. was Luminous. For having several Nights sent purposely into the Larder, to observe, whether any Veal, since brought thither, or any other Meat, did afford any Light, a negative Answer was always brought me back ; save at one time, which happened to be within 48 hours of that, at which the Luminousness of the Veal had been first taken Notice of ; for at that time there was in the same Larder a conspicuous Light seen in a Pullet, that hung up there, which having caused to be brought up into a darkned place in my Chamber in the Night time, I perceived four or five Luminous Places, which were not indeed near so large as those,

those, of the Veal, but were little less vivid than they. All of these I took Notice to be either upon or near the Rump, and that which appeared most like a spark of fire, shone at the very Tip of that Part; yet was not this Foul mortified, nor at all ill scented, but so fresh, that the next day I found it very good Meat. But whether this may reasonably lead to a suspicion, that the peculiar Constitution of the Air in that Larder, and at that time, may as well deserve to be taken into Consideration, as the peculiar Nature of the Animals, whose Flesh did shine, is a Question, that I, who have scarce time to name it, must not presume to do any more than Name it. And therefore as soon as I have begged your Pardon for this tedious though hasty scribble, I shall without Ceremony subscribe my self, &c.

*A new Experiment
of the Effects of the
Atmosphere.*

The next thing we shall take notice of is, a new Experiment of the noble R. Boyle concerning an Effect of the varying weight of the Atmosphere, upon some Bodies in the Water, the Description whereof was presented An. 1671 to the Perusal of the Right Honourable the Lord Bruncker, as follows.

Though many things have by Ingenuous Men been observed, as to the Power and Operations of Atmosphere's weight upon Liquors, that are exposed to it in Torrecillian Tubes, or other Vessels closed at one end, and near the Top, either empty or unfilled with any visible Body, yet Men seem not to have much inquired, what Effects the Variation of this weight of the Atmosphere may have on the Liquors which it presses in other Vessels than such

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as Baroscopes or Pumps. And yet when I remember how much of Air appears, by our Engin to be visibly harboured in the Pores, not only of Water, but of the Blood, Serum, Urin, Gall and other Juices of the Human Body. And that the Pressure of the Atmosphere, and the Spring of the Air work upon Liquors, and on Bodies immersed in those Liquors, as well as upon solid ones immediately exposed to the Air, I am prone to think; that the very Alterations of the Atmosphere, in point of weight, may in some Cases, have some not contemptible Operations, even upon Men's Sickness or Health; when the Ambient Air, for Instance, grows suddenly very much Lighter than it was before, or than it was wont to be, the Spirituous and Aerial Particles, that are plentifully harboured in the Mass of Blood, will Naturally swell that Liquor, and so may distend the greater Vessels, and not a little alter the Celerity and Manner of the Circulation of the Mass of Blood, by the Capillary Arteries and Veins. By which Alteration, that divers Changes may happen in the Body, will not seem improbable, to those that know in General, how Important a thing the manner of the Circulation of the Blood may be there, though as to it's particular Effects, I leave them to the Speculation of Physicians; and shall only add, that to keep this Conjecture of mine (for I propose it as no other) from seeming groundless or extravagant, I will annex an Experiment, that you will not perhaps dislike, just as I find registred amongst some of my loose Papers.

I caused to be blown at the flame of a Lamp, three small round Glass Bubbles, about the bigness of Hazel-Nuts, and furnished each of them with a short and slender Stem, by whose means they were so nicely poised in Water, that a very small change of weight would either make them emerge, if they but lightly leaned on the bottom of the Vessel, or sink if they floated on the top of the Water.

This being done at a time, when the *Atmosphere* was of a convenient weight (and such a Season is not ordinary difficult to be chosen within some reasonable time to him that wants neither Attention nor a good Baroscope,) I put them in a wide mouthed Glass, furnished with common Water, and leaving them in a quiet Place, where yet they were frequently in my Eye, and were suffered to continue many Weeks, or some Months; I observed as I expected, that sometimes they would be at the top of the Water, and remain there for divers Days, or perhaps Weeks; and sometimes would fall to the bottom, and after having continued there for some time, longer or shorter, they would again emerge. And though sometimes (especially, if I removed the Vessel, that contained them to a Southern Window,) they would rise to the top, or fall to the bottom of the Water, according as the Air was hot or cold; yet it was not difficult to distinguish those Motions, from those produced by the varying Gravity of the *Atmosphere*. For when the Beams of the Sun, or Heat of the ambient Air, by rarifying the Air included in the Bubbles, made that Air drive out some of the Water,

Water, and consequently made the whole Bubble (consisting of Glass, Air and Water) somewhat higher than a Bulk of Water equal to it, though the Bubble did necessarily swim, as long as the included Air was thus rarified, yet when the absence of the Sun, or any other Cause, made the Air lose it's adventitious Warmth, there would ensue a condensation of the Air again, and thereupon an Intrusion of more Water (to succeed the Air) into the Glass, and consequently a sinking of the Bubble; and this would commonly happen at Night, if it did not happen sooner. But when it was upon the Account of the varying weight of the *Atmosphere*, that the Bubbles either rose or fell, it appeared by the Baroscope, that the *Atmosphere* was so heavy or so light, that they ought to do so. Insomuch, that I divers times predicted, whether I should find the Mercury in the Baroscope high or low, by observing the situation and posture of the Bubbles, and consulting that Instrument, it veryfied my Conjecture. And though whilst the *Atmosphere* was not too considerably either light or heavy, the Changes of the Air as to heat and cold, would (as I was saying) place the Bubbles sometimes at the top, and sometimes at the bottom of the Water, within the compass of a Day; yet if the *Atmosphere* was either very heavy or very light, the Bubbles would continue at the bottom or the top of the Water for many Days together, in Case the *Atmosphere* did not in all that time change it's Gravity. And I remember, that I did, for Curiosities sake, when the Quicksilver was high in the Baroscope, put the
Glass

Glass two or three Days in a South Window about Noon (and for a good while after,) and that in Sun shining Weather, and yet even then the Bubbles did not emerge, though it appeared by a good sealed Weather Glass, which I kept in the same Window, that the ambient Air, was much warmer than at other times, when I had observed the Bubbles to keep at the top of the Water.

N. B. 1. It being very difficult to poise several Bubbles precisely, as well one as another, I thought it not strange, that all the three Bubbles did not constantly (though for the most part they did) rise and fall together, but sometimes two of them, and now and then (though seldom) one alone would sink or emerge, when the change of the weight of the *Atmosphere*, was not considerable enough to operate sensibly upon the rest (and of such Instances I have had the Opportunity to observe one or two within these last three Days :) And therefore it is not amiss, to poise a greater Number of Bubbles together, that after tryal made of all, the fittest may be chosen. Which Advertisement will appear the more proper, because of what is to be added in the following Note.

2. I have observed it sometimes to happen, that a Bubble, that floated, when it was first poised, would after a while, subside without any manifest Cause, or if it were made to sink by such a Cause, it would continue at the bottom of the Water, though that Cause were removed : Which difficult *Phænomenon* seeming, to depend upon a kind of Imbibition, made of certain Particles of an Aerial Nature, by the Water;

Water; the consideration of it belongs to another place, not to this; where it may suffice, that the Experiment did sometimes actually answer Expectation, as that above related did, wherein my main drift was to shew, that since, the *Atmosphere* is heavier or lighter, it's capable to work upon Bodies under Water, so as to procure their sinking, or their emersion; the Air (though a fluid, a thousand times lighter) must lean or press upon the Water it self, by whose intervention it produces these Effects; which confirms what I elsewhere teach, that the *Atmosphere* is incumbent, as a heavy Body, upon the Terraqueous Globe.

3. Besides the other Circumstances, upon whose account this Experiment may fail of success, the Season of the Year wherein it is tryed, may for ought I know, be considerable. For which Reason, I shall here add this Advertisement, that I choose, but do not confine my self, to make my Tryals about the beginning of the Spring, as a time wherein notable Alterations of the Air, as well as to weight, as to other things, are the likeliest to be frequent. So far this Experiment, which upon this Occasion is likely to be improved into a new kind of Baroscope.

The next thing that occurs, is a Letter of *Of Ambergreese.*
the Honourable Robert Boyle of September the 13th. 1673. to the Publisher of the Transactions, concerning *Ambergreese*, and it's being a vegetable Production.

SIR,

SIR,

SOME Occasions calling me this afternoon up to *London*, I met there with a very intelligent Gentleman, who was ready to go out of it, but before he did so, he willingly spared me some time, to discourse with him about some of the Affairs of our *East Indian* Company, of which he was very lately Deputy Governor; and his Year being expired, is still, one of the chief of the Court of Committees, which a Foreigner would call Directors of that considerable Society. And amongst other things, talking with him about some Contents of a Journal lately taken in a *Dutch East Indian* Prize, I learnt from him, that he who understands that Language very well, is now perusing that Manuscript, and among many things recorded there, that concern the Oeconomical and Political Affairs of the said *Dutch* Company, he met with one Physical Observation, which he thought so rare, that remembring the Curiosity I had expressed for such things, he put it into *English*, and transcribed it for me, and immediately drawing it out of his Pocket, he presented me the short Paper, whereof I now shew you the Copy. Upon Perusal of which, you will very easily believe, that not only his Civility obliged me, but the Information it brought me, surprized me too. For the several Tryals and Observations of my own about *Ambergreese*, have long kept me from acquiescing either in the Vulgar Opinion, or those of some Learned Men concerning it, yet I confess my Experiments did much less discover what it is,

is, than this Paper hath done, in case we may safely and intirely give credit to it's Information, and that it reach to all kinds of *Ambergreese*. And probably, you will be invited to look on this Account, though not as compleat, yet as very sincere, and on that score credible; if you consider, that this was not written by a Philosopher to broach a Paradox, or serve an Hypothesis, but by a Merchant or Factor for his Superiors to give them an Account of a Matter of Fact, and that this Passage is extant in an authentick Journal, wherein the Affairs of the Company were by publick Order from time to time registred, at their chief Colony, *Batavia*. And it appears by the Paper it self, that the Relation was not looked upon as a doubtful thing, but as a thing from which a practical way may be deduced to make this discovery easily Luciferous to the *Dutch* Company. And I could heartily wish, that in those Countries, that are addicted to long Navigations, more Notice than is usual were taken and given of the Natural Rarities that occur to Merchants and Sea-Men. On which Occasion I remember, when I had, in compliance with my Curiosity, put my self into our *East Indian* Company, and had, by their Civility to me, been chosen of their Committee, as long as my Health allowed me to continue so; I had the Opportunity, in some Register Books of Merchants *English* and *Dutch*, to observe some things, which would easily justify this wish of mine, if my Haste and their Interest would permit me to acquaint others with them. But to return to our Account of *Ambergreese*, I think you will easily

easily believe, that if I had not received it by a Paper, but immediately from the Writer, I should by proposing several Questions, have been enabled to give you a much more satisfactory Account, than this short one contains. But the obliging Person that gave it me, being just going out of Town, I could not civilly stay him, to receive my Queries about it, which though (God permitting) I may propose 'ere long, if I can light on him again, yet I fear he hath given me in these few Lines, all that he found about this Matter. However this Relation as short as it is, being about the Nature of a Drug, so pretious and so little known, will not I hope be unwelcome to the curious, to whom none is so like to convey it so soon and so well, as Mr. Oldenburg; whose forwardness to oblige others by his various Communications, challenges Returns of the like Nature from others, and particularly from his affectionate humble Servant.

The Extract it self out of a Dutch Journal, belonging to the Dutch East-Indian Company.

Ambergreese is not the Scum or Excrement of the Whale, &c. but issues out of the Root of a Tree, which Tree, how far soever it stands on the Land, always shoots forth it's Roots towards the Sea, seeking the warmth of it, thereby to deliver the fattest Gums that comes out of it: Which Tree otherwise by it's Copious Fatness might be burnt and destroyed.

Whereever

Whereever that fat Gum is shot into the Sea, it is so tough that, it is not easily broken from the Root, unless it's own weight, and the working of the Sea does it, and so it floats on the Sea.

There was found by a Souldier $\frac{2}{3}$ of a Pound, and by the chief, two peices weighing five Pounds. If you plant the Trees, where the Stream sets to the Shoar, then the Stream will cast it up to great Advantage, *March, 1. 1672. Batavia, Journal advice from*——

The next thing we shall take Notice of, as it comes in our way, is, an Account of the two sorts of *Helmontian Laudanum*, communicated by the Honourable Robert Boyle, together with the way of the Noble Baron F. M. Van. Helmont, Son to the Famous *Johannes Baptista* of preparing his *Laudanum*.

*Of the two
sorts of
Helmonti-
an Laudan-
um.*

——As for the *Helmontian Laudanum*, you may use your own Liberty in suspecting the Receipts that go about of it. For the Name it self seems ambiguous to me, who am well informed, that there are two Sorts of *Helmontian Laudanum*; the one used by the Elder *Helmont*, the other by his Son. The former was a great secret communicated to me by an Expert Chymist, sent by a German Prince to compliment *Johannes Baptista Van. Helmont*, some of whose Manuscripts (one of which perished in the Fire of London) he procured together with the way of making his *Laudanum*, which having received from him fourteen or fifteen Years ago, I carefully prepared, and thought my Labour so well recompenced, by the Extraordinary Operations it had, not so much in my Hands,

Hands, as those of Learned Physitians and others, to whom I presented Portions of it, that I should have thought the Chymist a Benefactor to Physick, if he would have made it Publick, or permitted me to make Publick, the way of making so useful a Medicine. And tho' the Access to my Laboratory was so free to ingenious Men, who knew such a Medicine was preparing there, that some of them might easily suppose themselves Masters of the secret, yet my Justice to the Communicator, who made a great & deserv'd Benefit of the *Laudanum*, made me take that Care to conceal some of the Circumstances, that Men may easily be much more confident than sure, that they have the right way of making the Medicine. Which because I durst not Communicate, meeting two years ago, with that obliging and very Ingenious Person F. M. Baron *Van. Helmont*, Son to the Famous *Johannes Baptista*, I obtained from him by Word of Mouth, some Directions about the *Laudanum*, he uses, which though he confessed, and I soon perceived, to be differing from his Fathers, yet he seemed to think it not inferior and more portable. But he having for a certain Reason imparted to me his Process, only by Word of Mouth; lest it should slip out of my Memory, I soon after committed it to writing, as the particulars I gathered from his Writing occurred to me, and at the next season caused the Medicine to be prepared in my Laboratory, where the Progress was often watched in my absence by a very Learned and Industrious *London* Doctor, who having at my request made many Tryals with it, and some in Cases where other

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other *Laudanums* had been found unavailable, both uses it, and commends it more than I could expect from so wary and judicious a Man. This Medicine being somewhat more cheap and easy to be made than the Elder *Helmonts*, the Experience of it's Efficacy made me desire of the Younger, a Permission to communicate it for the *Publick Good*, and to prevent those spurious Receipts, that go about of the *Helmontian Laudanum*, which request of mine being almost as soon granted as made, I think my self bound both to own his readiness, to oblige the Publick, and to acquaint them with his way of making so considerable a Medicine, as I practised it; though if I had received his Directions in Writing, they might have been more Full and Methodical. For though I perceived, that he sometimes a little varies his Preparations; yet that *Laudanum*, proving very successful, that was made according to the annexed Paper, I think it will not be amiss to keep to that: Which I wish could have been Published before the Season of the Quinces were so far advanced. And I shall the more hope it may come abroad before it be quite too late, if you please, to afford it room in the Papers, where with I am informed you intend this Week to gratify the Curious.

Laudanum Helmontis Junioris.

Take of Opium a quarter of Pound, and of the Juice of Quinces four Pound at the least (for near five Pounds would perhaps do better). The Opium being cut into very thin Slices, and

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then

then as it were minced to reduce it into smaller Parts, is to be put into, and well mixed with the Liquor, first made luke-warm, and fermented with a Moderate heat, for eight or ten days, rather more than less, then filter it (which Circumstance the Author often omits, though I do not) and having infused in it, Cinnamon, Nutmeg and Cloves, of each an Ounce (the Author sometimes uses half an Ounce more of each Spice) let them stand three or four days more ; If it be a full Week it may be so much the better, then filter (or strain it well through a Canvas bag) the Liquor once more, having let it boil a While or two after the Spices have been put in. This being done, evaporate away the Superfluous Water, to the Consistence of an Extract, or to what other Consistence you please ; Lastly, Incorporate very well with it, two or at most three Ounces of the best Saffron reduced to fine Powder. (Sometimes the Author instead of the Powder makes use of as much Extract as can be obtained from the Quantity of Saffron).

According to the Consistence you desire to have your Medicine of, you may order it so, as either to make it up into a Mass of Pills (in which form I have caused it to be given) or keep it in a Liquid form ; but in this later Case, the evaporation must have been made more sparingly, that after the putting in of the Saffron, or it's Extract, it may not grow too thick. In this form the Dose may be from five or six drops to ten or fewer, according to Circumstances ; and of the Pills a somewhat less quantity is required,

The

The next thing we shall take notice of is, **Conjecture** concerning the Bladders of Air found in Fishes, communicated by A. J. and illustrated by an Experiment suggested by the Honourable Robert Boyle.

A Conjecture about the Bladder of Air found in Fishes.

Reflecting on that Question, whether Liquids gravitate on Bodies immersed or not? I came to a Resolution in my own thoughts, that they do gravitate; and one of the greatest Instances that did occur to me was, that a Bubble of Air rising from the Bottom, does dilate it self all the way coming to the Top; which is caused by the lessening of the weight or pressure of the incumbent Water, the nearer it is to the Top. Upon Consideration of that Instance, the following Conjecture presented it self to my thoughts; that Fishes, by Reason of that Bladder of Air, that is within them, can sustain or keep themselves in any Depth of Water: For the Air in that Bladder is like the Bubble, more or less compressed according to the depth the Fish swims at, and take up more or less space; and consequently the Body of the Fish, Part of whose Bulk this Bladder is, is greater or less, according to the several Depths, and yet retains the same weight. The Rule *de Insidentibus humido* is, that a Body that is heavier than so much Water as is equal in Quantity, to the Bulk of it, will sink; a Body that is lighter, will swim; a Body of equal weight will rest in any Part of the Water.

Now by this Rule, if the Fish in the middle Region of the Water be of equal weight to the Water that is Commensurate to the bulk of it, the Fish will rest there without any Tendency

cy upwards or downwards, and if the Fish be deeper in the Water, the bulk of the Fish becoming less by the Compression of the Bladder, and yet retaining the same weight, it will sink and rest at the bottom. And on the other side, if the Fish be higher than the middle Region, the Air dilating it self, and the bulk of the Fish consequently increasing, but not the weight, the Fish will rise upwards, and rest at the Top of the Water.

Perhaps by some Action the Fish can emit Air out of his Bladder, and afterwards out of it's Body, and also when there is not enough, take in Air, and convey it to this Bladder, and then it will not be wonder'd, that there should be always a fit Proportion of Air in the Bodies of all Fishes to serve their use, according to the Depth of Water, they are bred and live in; perhaps by some Muscle, the Fish can contract this Bladder, beyond the pressure of the weight of Water; perhaps the Fish can by it's sides or some other defence keep off the pressure of the Water, and give the Air leave to dilate it self. In these Cases, the Fish will be helped in all intermediate distances, and may rise or sink from any Region of the Water without moving one Fin.

It were worth observing, what Fishes want Bladders, and if the Bladders of several Fishes are not of different Shapes or Bigness, and how they are in Sea Fishes, that live in great Depths, and whether any Amphibious Creatures have them, or any thing analogous, as the Lungs may be, or other Cavities. By an Enquiry into these and other particulars; this conje-
cture

cture may be either Fortified or Refuted.

So far this Conjecture, in reference to which, when it was propounded to the Honourable Robert Boyle, he reflecting upon the manner, how a Fish comes to rise or sink in the Water, soon bethought himself of an Experiment, probably to determine, whether a Fish makes those Motions by constricting or expanding himself? The Experiment by him suggested was; To take a Bolt head with a wide neck, and having filled it almost full with Water, to put into it some live Fish of a convenient size, that is, the biggest that can be got in, as a Roch, Perch or the like, and then to draw out the neck of the Bolt head as slender as you can, and to fill that also almost with Water: Whereupon the Fish lying at a certain depth in the Water of the Glass, if upon his sinking you perceive the Water at the slender Top does subside, you may infer, he contracts himself, and if upon his Rising, the Water be also raised, you may conclude he dilates himself.

The next thing we shall take Notice of is, *An Observation of red Snow.* an Extract of a Letter sent from *Genoa* to *Seignior Sarotti*, the *Venetian* Resident here, and by him communicated to the Honourable Mr Boyle, which is as followeth.

On *St. Joseph's Day*, upon the Mountains called *Le Langhe*, there fell upon the white Snow, that was there already, a great Quantity of red, or if you please Bloody Snow. From which being squeezed, there came a Water of the same Colour. Of this there are here many Eye-witnesses.

Dr. Cole's
Letter to
Mr. Boyle.

The next thing that occurs to our Observation is a Letter from the Learned Dr. Cole, directed to the Honourable Robert Boyle, concerning a false Conception. The Letter and it's Direction is as follows.

Epistola Clariss. Viri Dom. Gulielmi Cole, Med. Doct. ad Honoratissimum Dom. Dom. Robertum Boyle, Armigerum, de falsa Graviditate.

Ignoscat mihi Humanitas vestra, Honoratissime Vir, quod ignotus graviora, quibus in rem literariam (præsertim Medicam) invigilas negotia interpellare ausim. Eximius ille candor, quo cunctos, eos maxime quibus Natura Studium cordi est, persequeris, hanc mihi fiduciam, ut ad te literas consignarem suggerit, nec de venia obtinenda dubitare finit, quandoquidem è Natura (cui se ab intimis secretis nulli non suspiciunt & gratulabuntur) penit, quod afferunt, de promptum invenies, Historiam sc. satis, opinor, raram ; quam (nisi ejusdem fama ad aures, vestras jam audum pervenerit) paucis hisce accipere digneris, Rei plurimas mihi testes, tota habes Vicinia.

Matrona quædam, mente omnino constans, pia, fide dignissima, & circa prægnantes & puerperas olim versatissima, Septuagesimum nonum annum nunc agens, se jam utero gessere jam diu credidit, creditq; adhuc, imo quod magis mirabere (forsitan & in usu excipies) per totos septem elapsos menses gestasse. Dum illac negotiorum Causa quadrienno abhinc iter facerem, & à quibusdam, ipsa non minus credulis, rei famam acceperam ; Novitate permotus ad hoc miraculum nulla mora contendi, ut tam insolita scena oculos pascerem. Inveni ventre multum tumens, non autem, qualis esse solet Hydopicorum

tumor

tumor apparuit, sed sursum more gravidarum, eminebat. Et dum plura scisciterer, nec illam (i.e. nec ejus maritum cui decennio minor uxore fuit) de ingravidatione amplius debitantem comperissim, petii ut natura fiducia causam exponeret.

Illam haud gravate respondit, se olim decem liberosenixam, nec ab eo tempore per 23 annorum spatium mensum fluxum passim, in eam tandem satis copiosum incidisse, ex quo brevi post omnia conceptus signa apparuerunt, inde nauseam & vomitiones subinde recurrentes, nec non & inordinatam quorundam praeteris ciborum Appetentiam, ut pregnantium mos est, invasisse, & per plures menses persistisse, Ventre paulatim intumescente; postea solita tempore primas fetus Motus se percepisse, & exinde tumore indies actio, motus etiam tanquam ejusdem locum saepe variantis, nunc ab una nunc ab altera ventris parte, qui & tractu temporis invalescebant, sensisse; tandem (appellente usitato parit tempore) ipsos parturientis Labores subisse, ut obstetricem accersere necesse habuerit, sed non adfuit Lucina; attamen licet dolores illi evenuerint haud detumuit venter; quin saepius praedolorum recursum obstetrix (qua & ipse, prout a nonnullis accepi, in eandem cum Domina sua Sententiam propenderat) rursus accissa est. Ab eo tempore motum illum, sed vegetiorem se persensisse asseruit, adeo ut vestes frequenter astolli ab adstantibus conspecta fuerint tumore, licet aliquantulum, haud tamen impense aucto. Mammae, quas & vidi & attraxi, minime, pro ut vetulis solenne est, flaccidae, sed ampla & distenta (at non supra modum) glandulisq; more pregnantium, distincta. Mihi quin etiam sponte affirmavit Obstetricem sibi asseruisse Orificium Ute-

riinternum aque tenerum & molle fuisse, ac in qua-
vis scemina mox paritura. Cum porro perconterer,
utrum inter decumbendum, cum a latere ad latus
se reclinaret, pondus ab uno in alterum devolvi per-
ciperet, prorsus negavit, meq; de Mola nil suspicari
jussit, cum illam peritinis dignosceret, quam ut hac in
parte decipi posset.

Cis paucos Dies illam revisi, eademq; ut retuli,
de novo narrantem audiui, mammaeq; in eodem statu
comperi, ventrem vero aliquanto magis intumuisse, de
cujus tensione plurimum conquesta est. Motus au-
tem magis, quam ante hac, vegetos se cum percipere
dixit; atq; ego, manu supra Vestes admota, bis,
dum pauculam illic moram facerem, ejus modi mo-
tum nunc ex una nunc ex altera parte ventris sensi,
qualem in vere pregnantibus observasse memini.
Toto hoc Gestationis (si ad ipsius mentem loqui li-
ceat) tempore nullum, saltem alicujus momenti,
sanitatis dispendium passam se profitetur, nullis
symptomatis laborasse, nisi quae gravidis sunt fami-
liaria; & quae etiam, dum puerpera fuit, perpeti
solebat. Cibos satis recte appetit, optimeq; digerit,
minime siticulosa est, pro ut hydropicis usui est,
urinamq; ad liquidorum assumptorum mensuram,
proportionatam reddit; ad morem autem gravidarum
solito frequentius. Aedes hortumq; satis va-
lenter obambulat, nec baculi fulcimentum indiget.
Moderate dormit, sed pertulca ventris sarcina matri
sue, vix ultra Diluculum quietem indulget, verum
calcitratu cogit, è lecto surgere, quo facto, & ci-
bis assumptis, illa se iterum, somno parat, saltem
mitius facit. Quoad habitum Corporis carnosus est,
vultusq; nil morbiui (me iudice) intus latens pra
se fert. Nullum tibi arum pedumve toto decursu un-
quam passa est tumorem, nec vulgatum ullum hydro-
pis

pis cujuscunq; sive universalis, sive ipsius uteri indicium, prater solum, quem dixi, abdominis tumorem colligere potui. Nec tamen fetum Utero includi quisquam, nisi qui fama sua prodigius est assauerit; cum & Aetas, & Temporis, à prima affectus invasionis decursu longitudo (quorum nutrum cuiquam accidisse, praterquam quod Saræ pro Miraculo obtegitte Sacra Pagina testatur, ulla, quod sciam, Historia fide digna propalavit, in tam obsonam sententiam insurgant. Quicquid id est, Illustrissime Heros, haud fortasse, abs re fore iudicabit eximius, ille vester arcani quantulicunq; investigandi arder, ut examen subeant, tam inusitata Phenomena, quod alimato iudicio, quale tuum vere est imprimis sperandum esset. Iter Londinum (marito nuper Vita functo) propediem Meditatur, quod superest Vita apud filiam confectura; ubi (cum apulerit) ab ipsius ore, si locata Opera dignum censeris, certior fias; nec enim in tam frequenti, novitatis avida, urbe diulatare potest. Interim boni consulas, obtestor, quod in observantia tesseram offert.

Honoratissime Domine,

Jan. 28. 1672.

Favoris Vestri cupientissimus

G. Cole.

Speraveram fore, quod si me superstitie e vivis excederes spectabilis Domina, notitiam aliquam ex dissectione, vel propria inspectione, vel aliorum communicatione, adipiscerer, unde tam insolita, maxime in proventa adeo Aetate, profuerint accidentia. Verum didici tandem Dom. postquam per duos vel

tres

*tres annos Londini satis sanam (cum eodem tamen
tumore ac moribus, licet non usq; adeo vegetis ac
cum ipse inviseram, literasq; istas exaraveram)
duxisset vitam, fato cessisse, cumq; instarent Celeb.
aliquot Medici, ut cadaveris dissectandi copia illis
fieret, viri ejusdam nimis pii, suasu, id eis band
concessum est.*

*An Account
of a self
moving
Liquor.*

The next thing we shall take Notice of, is an Historical Account of a self moving Liquor, communicated by the Honourable Robert Boyle.

An ingenious Teacher of Mathematicks, having occasion to make a Composition for a new fire Engin, whereof he was to shew his Majesty a Tryal, mingled divers ingredients in an Earthen pot over kindled Coals: but could not, or did not, do it so warily, but that the Matter took fire, and began to blaze furiously; which obliged him to stifle the flame, as hastily as he could: and having removed the Vessel from the fire, and suffered it to grow cold; when afterwards he came to look upon it, to see if what remained might be of any Use to him, he was surprized to find it variously and briskly moved. Wherefore having set it aside, to be sure, that it might be thoroughly cold; he after some Hours visited it again, and found it move as before. And having cast store of Seeds upon it, to see if the Liquor would move them also, the bituminous part of it connected them into a kind of thick scum, that covered most of the Superficies; but yet left some Intervals, in which the Liquor appeared, and discovered that it continued it's Motions. Two Days after, the Engineer discoursing with me of his Fire-Work, about which he had advised with me before,

before; told me, among other things, of this odd Accident. And when I had asked him, if the Motions continued still, and had been answered affirmatively, though it was then a dark Night, and ill Weather, my Diffidence or my Curiosity, made me engage him to send for the Pot as it was, partly to be sure of the Matter of Fact, and partly to try, if the Knowledge I had of the Ingredients, which he had before told me, would afford any hint of the Cause of so odd an Effect, alike to which in kind, tho' not in degree, I had many Years devised, and succesfully practised, the way of producing.

The Vessel being come, though the hasty transportation of it, seemed to have sufficiently disturbed it, there did appear manifest signs of such a Motion, as the Engineer had ascribed to it; and therefore he being willing to leave it with me, I caused it to be set aside in a Laboratory, where some Furnaces kept the Air constantly warm, and did there and elsewhere at distant times, look heedfully upon it, now and then displacing or taking off some of the thick scum, that too much covered the surface of it; and by this means, I had the opportunity to take notice of several *Phanomena*, whereof these are the chief.

First, That I observed, that the Motion of this Liquor was not only brisk, but very various; so that having loosened some small Portions of the scum from the rest, one of them would be carried towards the right hand for Instance, and another towards the left at the same time. *Secondly*, Where the Liquor first came out from under the scum, it seemed to move the most briskly

briskly, flowing almost like a Stream, whose Motion upwards had been checked, and as if it were reverberated by that incumbent Obstacle. *Thirdly*, several Motions in this Liquor were the more easy to be observed, because though it were dark, yet it was not uniform, consisting in part of oily and bituminous Ingredients, which though they seemed to have but one common Superficies with the rest of the Liquor, yet by their Colours and Power of vigorously reflecting the Light, they were easily enough distinguishable from the rest. And I often observed, that some of these unctuous Portions of Matter, emerging to the surface of the Liquor, though perhaps at first, one of them would not appear bigger than a Pins head, yet in moving forwards, it would at the same time diffuse it self circularly, and make as it were a great *Italo*, adorn'd with the Colours of the *Rain-Bow*, and so very vivid, as afforded a very pleasant, and at the first surprizing Spectacle; these Phantasms often nimbly succeeding one another, and lasting till they lost themselves against, or under the thick Scum. *Fourthly*, The Motions of this odd Liquor, were not only various, but frequently vortical; to be satisfyed of which, I sometimes put short pieces of Straw, or fragments of some such like Stuff, upon the discovered part of the Surface of the Liquor, by which they were carried towards very distant, if not opposite, parts of the Vessel at the same time. But to make the vortical Motion more evident, I several times detached considerable large pieces of the thick Scum, from the rest of the Body; and had the Pleasure to see them move both with a progressive

progressive Motion in crooked Lines, and with a Motion about their own middlemost Parts. All this while the Liquor, whose parts were thus briskly moved, was actually cold, as to Sense. *Fifthly*, to observe what the presence or absence of the free Air would do to this Liquor, I caused many Spoonful of it, with some of the Scum, to be put into a Cylindrical Glass, which though large it self, had a Neck belonging to it, that was but about the bigness of ones Thumb, that it might be well stopped with a Cork. But having by this means kept the free Air from having a full and immediate contact with the whole surface of the mixture, as it had, when that mixture lay in the wide mouthed Vessel, I could not perceive the Liquor to move to and fro, no not though the Orifice of the Neck were left open; whereas having at the same time, powred some of the Liquor into a very shallow and wide mouthed Vessel, called in the Shops a clear caked Glass, it moved rather more than less nimbly and variously, than in the great Earthen Pot, which yet was of the same shape, and shewed as many of those vivid and self dilating Circles, that have been mentioned in the third Number. And these, by the fineness of their Colours, and the quickness wherewith they succeeded one another, afforded a delightful Spectacle, as long as I stayed to observe the Liquor. *Sixthly*, though the Motions of the hitherto mentioned Liquor, did not seem to be always equally brisk, yet they continued to appear manifest and various, in some diversities of Weather, as to cold and heat, and when I looked upon it by Candle light, as well as by

by Day light. And when being not well enough to visit it my self, I sent one purposely to look upon it, about ten a Clock at Night, he brought me word, that it continued to move as formerly; and so it hath done for ten Days. And how much longer it will continue to do so, Time must determin.

Poscript.

Some time after the foregoing Account had been written, when I came to look upon the Liquor (which in the mean time had been several times viewed, and appeared to retain it's Motions;) I found to my trouble, that some Bodies impertinent Curiosity and Heedlessness, had cracked the lower part of the Earthen Pot; at which overture the Liquor, though not the Scum was run out, which had put a Period to our Observations, but that foreseeing that such an Accident might happen, I had long before taken out some Spoonfuls of the Liquor, and kept it close stopped in a Vial. By this means I had the Opportunity to observe, that when I poured out the Liquor into a wide Mouthed Vessel, it would move as before, though this was done some Weeks after it had been put up. And I remember, that long after, having one day received the Honour of a visit from a Foreign Minister, who was an Inquisitive Person, and a Man of Letters, we chanced amongst other things to talk of this Liquor. And though it were scarce to be hoped, that it should still retain any of it's Mo-

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tive Vertue, yet to gratify his Curiosity, and that of some Ingenious Men there present; I caused the Vial to be brought, and having unstopped it, I poured out the Liquor into a convenient shaped Vessel; in which, after we had suffered it to rest a while, they were delightfully surprized to see it move (tho' not in my opinion so briskly as before, yet) very manifestly & variously. This encourag'd me to think it possible, that it might retain some Motion, tho' but Languid, 7 or 8 Weeks after, and therefore on the 25th of July, I looked upon it again, and having caused it to be poured into a China Cup, it manifested at first a manifest and various Motion. But this after a while did so slacken, that I began to have some suspicion, that the Motion it was put into by Effusion, and the first contact of the Air, might have given it the greatest Part of it's Agitation. But this being but suspicion, I put the Vessel into divers Postures in a Window, the better to discover the true Cause of this *Phænomenon*; but whilst I was busie about this, which engrossed my Attention, a mischance overturned the Cup, and by throwing down the Liquor, put an end to my Speculation. Yet this mischance hindred me but from observing, how long the Agitation of our Liquor would have continued, but not from finding, that it lasted a great while. For I shewed it the Foreign Minister about, or after, the beginning of June, that is about five Months, or more, after the Liquor was observed to move.

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An Account
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Phosphorus.

The next thing we shall take Notice of is, a Paper of the Honourable *Robert Boyle* deposited in the Hands of the Secretary of the *Royal Society*, and opened since his Death, being an Account of his making the Phosphorus, &c.

There was taken a considerable Quantity of Man's Urine (because the Liquor yields but a small Quantity of the desired Quintessence) and of this a good part at least, had been a pretty while digested, before it was used; then this Liquor was distilled with a moderate heat, till the spirituous and saline Parts were drawn off, after which the superfluous Moisture was also abstracted (or evaporated away) till the remaining Substance was brought to the consistence of a somewhat thick Syrup, or a thin Extract. This done, it was well incorporated with thrice it's weight of fine white Sand; and the Mixture being put into a strong stone Retort, to which a large Receiver (in good part filled with Water) was so joyned, that the Nose of the Retort did almost touch the Water; then the two Vessels being carefully luted together, a naked fire was gradually administered for five or six Hours, that all that was Phlegmatick or Volatile might come over first. When this was done, the Fire was encreased, and at length for five or six Hours made as strong and intense, as the Furnace (which was not bad) was capable of giving (which violence of Fire, is a Circumstance not to be omitted in this Operation.) By this means there came over, good store of white Fumes, almost like those that appear in the distillation of the Oyl of Vitriol; and when those

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those fumes were passed, and the Receiver grew clear, they were after a while succeeded by another sort, which seemed in the Receiver, to give a faint blewish Light, almost like that of little burning Matches dipt in Sulphur. And last of all, the fire being very vehement, there passed over another Substance, that was judged more ponderous than the former, because it fell through the Water to the bottom of the Receiver; whence being taken out (and partly even whilst it stayed there) it appeared by several Effects, and other *Phænomena*, to be such a kind of Substance as we desired and expected.

The next thing we shall take Notice of is, *Mr. Boyle's way of examining Waters, as to Freshness and Saltness, which was deposited with the Secretaries of the Royal Society, and Sealed up and opened after his Death.*

I. Having been Commanded by the King, to shew his Majesty an Experiment of the way herein mentioned, to examin the Freshness and Saltness of Waters: I did in his presence (and that of his *Royal Highness*, his Grace the Duke of *Grafton*, and several Persons of Quality) make Tryal of it, both upon some Water prepared according to the Patentees way, and upon two or three Natural Waters, that were ordered to be brought. In all which Tryals (in some whereof his Majesty, for greater certainty, was pleased to employ his own Hands) the success was such, as moved him to vouchsafe the Experiment, the Honour of his special Approbation, and to give me an Encouraging Per-

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mission to communicate it, as a thing that may prove not unuseful to the Publick. This I think fit to mention, not only to procure to my way of trying Waters, the high advantage of a Royal, and on Philosophical Accounts, Illustrious Patronage; but that if this Method be found as beneficial as I wish it may, Men may know to whom they ought to acknowledg the early Publication of it. This is all my haste allows me to premise, to the Account I am going to deliver, of the way of trying Waters, hitherto spoken of: Which Account I shall set down, as I drew it up to be dispatched to a Friend, in case I should have his Majesty's Permission to impart it to him.

II. My way of examining the Freshness and Saltness of the Waters, though (because it is wont to be surprizing the first time one sees it tryed, and hath had the luck to be much talk-ed of in many good Companies) it's thought to be an Invention very difficult, to be either found out or practised, is yet really no such Mysterious thing, as Men imagin it. And for my Part, I hope it will be found much more considerable for it's use, than I think it is for the degree of skill and sagacity, that was necessary to devise it. For when I remembered and considered that (as I have found by various Tryals) diverse Metalline, and other Mineral Solutions could be readily precipitated, not only by the Spirit of Salt, but by crude Salt, whether dry or dissolved in Water, 'twas no very difficult Matter for me to think, that by a heedful Application of the precipitating Quality of common Salt, one might discover whether

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ther any Particles of it (at least in a Number any way considerable) lay concealed in a distilled Water, or any other proposed to be examined.

III. To find, whether I was not mistaken in this Conjecture, as also because it is very convenient to be as little as one can confined to one Material, I employed several Drugs, and those not all prepared by one Menstruum, to make the intended Discovery. And though two or three of my other Tryals and Successes, that I disliked not when I made them, yet that which I at last pitched upon as the most certain, and which therefore I meant, when I had the Honour to be sent for by his Majesty, about the Patentees Water, was that, which I think may be best understood, as well as recommended by this short Narrative.

IV. I took some common Water distilled in Glass Vessels, that it might leave it's Corporeal Salt, if it had any, behind it; and put into a Thousand grains of it; one grain of common dry Salt. Into a convenient Quantity, for example, two or three Spoonfuls of this thus impregnated Liquor, I let fall a fit Proportion, for Instance four or five drops of a very strong and well filtrated Solution of well refined Silver, dissolved in clean *Aqua Fortis* (for a shift, common or Sterling Silver will serve the turn). And I made the Experiment succeed with Spirit of Nitre, instead of *Aqua Fortis*, upon which there immediately appeared a whitish Cloud, which though but slowly, descended to the bottom, and settled there in a white Precipitate.

V. This Experiment having been several times, for the main of it, reiterated with success, I thought fit to keep constant to the way of Probation, made use of in it (and which Tryals had recommended to me, for betwixt 20 and 30 Years) though (by Reason of some things that haste forbids me to mention) I pitch'd upon this way without at all denying, that Men of Sagacity, especially if well versed in Chymical Operations, may upon the same Ground that I went on, find some other and cheaper ways, though scarce any more nice and certain, of compassing the same End.

VI. After what hath been hitherto said, I presume, I may seasonably proceed, to subjoyn the four ensuing Advertisements. And First, I shall give Notice, that to make the Experiment rather severely, than at all favourably, there was usually taken somewhat more than a Thousand Parts of Water, to one of Salt,

VII. Next I observed, that having let fall a few Drops of our Metalline Solution, into the Liquor obtained from Sea-Water, by the Patentees way of sweetening it; there did not presently ensue any white Cloud or Precipitate, much less such a one as had been newly afforded by the Water, that was impregnated with less than a Thousandth Part of Salt. And if after sometime there happened to appear (for it is not absolutely necessary there should) a little Cloudiness in this Factitious Liquor, it was both flowlier produced, and much less than that which appeared in the impregnated Water.

VIII.

VIII. And perhaps it may be proper, that I here observe (what is not wont to be taken notice of); That divers Solutions of Mineral Bodies may be precipitated by Dilution : That is (to explain this Expression) when the Solution hath time enough allowed to diffuse it self, through a great Quantity of Water, the Saline Parts are thereby so diluted and weakned, that they are no longer able to sustain the Mineral Corpuscles, they kept swimming before, but make with them and the Water, a confused and subsiding Mixture, usually of a whitish Colour. This may appear, when the Butter of Antimony, being put into common Water, is thereby quickly and plentifully precipitated in the form of that white Powder, that Chymists (not over deservedly) call *Mercurius Vitæ*. To which I may add, that I have also produced a Powder of that Colour, by pouring into common Water a strong Solution of Tin Glass, made in *Aqua-Fortis*. And by the same way we have precipitated the Tincture for Solutions of the finer Parts of Jalap, Benjamin, true *Labdanum*, Antimonial Sulphur, and divers other Bodies made in Vinous Spirits. If it were not for this Power, that Water hath to weaken most Solutions of Bodies, I could have employed instead of that Silver, either Quick-silver dissolved in *Aqua Fortis*, or Lead crude or calcined, in the same Liquor, or (which is more convenient) in strong Spirit of Vinager; since these and some others, are found to be precipitable by Salt Water into whitish Powders. But though a very heedful Observer may for a shift, make use of these Metalline Solutions, to guess

at the Quality of Water, as to Freshness and Salt-ness, yet the Precipitation that is made by Dilution, is not difficult to be distinguished, from that which is performed by a true and proper Precipitant (as in our case by the common Salt, that is harboured in the Pores of the Water) both by the quickness of the Effect, and the Copiousness of the white Substance produced, and in both those Accounts is very much inferior to it, as may evidently appear in the very different Effects that our Solution of — had upon the Patentees Water, or upon well distilled common Water, compared with those it had upon Water impregnated with a Thousandth Part of Salt, and upon divers common undistilled Waters. But to proceed,

IX. *Thirdly*, the Usefulness of this Experiment, is not to be Estimated only by the Exam- it helps us to make of dulcified Sea Water, but much more by the Estimate, that by it's means may be made of Natural fresh Waters, whether of Springs, Rivers, Clouds, Lakes, Wells, &c. For it being generally granted, that those Waters, *ceteris paribus*, are the best, as well for the wholesomeness, as divers Oeconomical Uses, as Washing, Brewing, &c. that are free from Saltness, which is an Adventitious, and in most Cases, a Hurtful Quality in Waters, by our way of examining these Liquors, a heedful Eye may in a trice discover, whether there be any latent Saltness in them (as most Waters imbibe from the Soyl they have traversed, or do stagnate in) and may enable one (especially by the help of a little Practice, to give a near guess, how much one

one Water is fresher than another, as I have purposely tryed with Pleasure in differing Waters, that were ordinarily drunk, even by considerable Persons. And if once you have attentively marked, what change four or five drops for Instance, of our discovering Liquor, will make in two or three, or some other small determinate Number of Spoonfuls, or rather of half Ounces of Water; 'twill not be difficult for a heedful Observer, keeping the same Proportion between the two Liquors, to make a near Estimate, whether any Natural Water proposed to him, have a greater, a lesser, or an equal Degree of Freshness or Saltness, than that Water he hath chosen for his Standard; and how much in case there be a difference, the proposed Liquor is less or more free from Saltness than the other.

X. And that to add this by the by, such a difference in a Liquor of such frequent inward Use as Water (which is the Basis of Beer, Ale, Mead and some other common Drinks) may have considerable Effects, upon Human Bodies, in reference to Health, may be probably argued from the differing Effect that Waters more or less impregnated with salt, have upon divers other Bodies; since most Pump Waters, for instance, will not boyle Pease and Beef, and some other Aliments, near so well as Spring-water, or Rain-water, which are usually softer, and more free from the Saltness we speak of. It is commonly known to Barbers and Laundresses, that the same Pump Water will not so well and uniformly, or without little curdlings, dissolve Wash-Balls and Soap, as Rain Water,

Water, and some running Waters usually will nay, when I was curious of tempering Steel, I remember it was confessed by the skilfullest Artists I made use of, that some Tools (as Gravers, &c.) made of that hardest of Metals, would receive a differing Temper, if they were quenched in Pump Water, from that with the like Extinction in Spring Water, or River Water, would give them. But how to make our Estimate of the Freshness and Saltness of Water, come nearest the Truth, is a Problem; of which I have now neither time, nor conveniency to deliver my Thoughts. And by what hath been said, I hope it does already seem sufficiently probable, that the way above proposed, may prove of good use, both to Navigators, that are often necessitated to Winter, in unknown places, and to others; that only, or frequently, drink that Liquor, without having any other better way than the Taste, which is but an Incompetent one, to estimate it's Freshness and Saltness by.

XI. I might add on this occasion, that whereas Experience hath informed several Persons, who have considered it, that divers Medicinal Waters, that are presumed to owe their Vertues to the Participation of either Metalline, or other Mineral Bodies, do, upon Tryal, appear to leave sometimes little, and sometimes nothing behind them, except a kind of common Salt; our Precipitant may much assist Men to discover, whether a Mineral Water proposed to be examined, do, or do not, contain such a Salt, and if it do, whether it contain it copiously or no. This I have tryed upon more than one

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of our English Mineral Waters, and thereby found in a trice, that one reputed of another Nature, contained pretty store of saline Matter, and that another (that is still for ought I have learned, of an unexamined and unknown Nature) is impregnated with a surprizing plenty of Saltish Substance. But how, and with what Cautions, our Precipitant may be the most usefully employed, about the Examen of Medicinal and other Mineral Waters, belongs not to this place, upon which Account, I forbear to declare the use I have sometimes made of our Precipitant, in examining the fresh Urin of Men, the Serum of Human Blood, and other Bodies belonging to what the Chymists call the Animal Kingdom.

XII. But *fourthly* and lastly, though I did not for certain Reasons, ascribe to our Method of examining Waters, a greater nicety, than to be able to discover one Part of Salt in a Thousand of Water, that Proportion being great enough to recommend it, and expressed by a round Number easy to be retained in ones Memory; yet I would not have it thought, but that if it were requisite, our Method may make more nice Discoveries. For having sometimes for Curiosities sake, put one Grain of Salt, into no less than fifteen hundred of distilled Water, we could manifestly (though not so conspicuously as before) make it appear by our way, that even this so lightly impregnated Liquor, was not devoid of Salt, but had more of that in it than some of the Patentees Water, that I kept by me, had; nay I once found, that a grain of dry Salt, being dispersed through two Thousand,

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and another time, that being dissolved in three thousand times it's weight of the same kind of Liquor, so inconsiderable a proportion of Salt, was plainly discoverable by our Precipitant.

XIII. But here Philosophical Candor forbids me, to conceal an Objection that I made to my self, though it be the Chief, if not the only considerable Scruple that occurred to me, about our way of examining Waters. For I foresaw, that it may be objected, that whereas the Experiments hitherto mentioned, have been tryed only upon Waters incorporated with gross or corporeal Salt, this perhaps may not hinder, but that they may be embued with the Spirits of Marine salt, which by Reason of their activity, may be as unhealthful to the Drinker as the grosser Salt it self. But though to this surmise I might answer, that a very small proportion of Spirit of Salt, may in many Cases make the Water seasoned with it, rather Medicinal than unwholesom; yet I shall answer more directly to the Objection, by saying, that to manifest it's being not well grounded, I took above a thousand Grains of distilled Water, and instead of corporeal Salt, put to it one drop of moderately strong Spirit of Salt (for I had much stronger by me, that I purposely declin'd to employ,) and having shaken it into the Water, I let fall a Portion of this unequally composed Mixture, some drops of our Solution of Silver, which presently began to precipitate in a whitish Form; insomuch, that for ought appeared to the Eye, this Tryal succeeded better, than if the Water had been impregnated with but a thousandth part of Corporeal Salt. The like

like Experiment was made with the Patentees Water, instead of the other. And to pursue this Tryal a great way further, I had the curiosity to diffuse one drop of Spirit of Salt, into two thousand grains of distilled Rain Water, and upon letting fall some drops of our precipitant into it, I found that the success well answered my expectation. And then to urge the Tryal yet further, I added as much of the same distilled rain Water, as by a modest conjecture made it amount to at least half as much more; so that one grain of spirit of Salt, had a manifest Operation tho' not quite so conspicuous as the former, upon above three thousand grains of Water, whose Immunity from common Salt we tried apart; and possibly, if the Vial could have contained more, and would not have been when filled, too heavy for our tender Ballance, the discolouration of the mixture would have been discernable, though but one grain of Salt had been put upon four or even five thousand grains of Water. And that a drop of the saline Spirit we made use of, did not equal in weight a grain of dry Salt; I found by this, that having let fall into a counterpoised piece of Glass, ten drops of that Spirit, I found them to want, near half a grain of nine grains weight, which way of estimating I choose, as less subject to any considerable Error, than that of weighing a single drop by it self.

XIV. The like tryal I made by substituting above a thousand grains of Rain Water, in the room of the like quantity of distilled Water; and these two Experiments I the rather mention, because they do not only shew, how free
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the Patentees Water was from spirituous, as well as from corporeal Salt; but also manifest, that whereas it is the Opinion of some Sea Men, and of a Person for whom I have a profound Respect, that Water ought to have a little saltiness to preserve it, if this be really a desirable Quality in our artificial Water, it may in a trice be supplied with as much saltiness, whether corporeal or spirituous as is required, and consequently, as will bring it to be equal in that Quality to the common Water of Rivers, or of Springs. And perhaps it will not be impertinent to add on this Occasion, that in some places, especially lying in hot Climates, it may sometimes be of good Use to know, whether on the Account of the Sun's heat, or that of the subterraneous Regions of the Earth, the Rain Water is impregnated with volatile (not acid) Spirits, like those that are distilled from Urine, and which I have for Curiosities sake, obtained from a Mineral Body, native *Sal. Armoniack*; upon which account I made a Tryal, that informed me, that if five or six drops of strong Spirit of Urine (whose drops I observed to be but small,) were shaken into a thousand grains at least, of distilled or rain Water, impregnated but with one of Salt; our Precipitant would make a discovery of some saltiness in the Liquor. And it were neither to be admired nor censured, if the Patentees Water, should sometimes shew a change, when our Precipitant is plentifully put, or long kept in it, especially that change being a more slight one, than that I came from speaking of. Since, for ought I have yet observed, not only such undistilled Waters,

Waters, as are generally allowed to be freely potable, but even those that Nature her self distils, are not always quite devoid of saltness. For I have found rain Water, that I have caused to be carefully saved, after the House tops had newly been well washed with former Rain, to grow a little troubled, if any store of our Precipitant were kept for some competent time in it. And being gently distilled off, it left a residue, which with a little of our Solution, afforded a far more suddenly made and copious Precipitate, than had been produced with the like quantity of even Pump Water it self. And though I have met with Rain Water, that was more free from Salt, than any spring or rain Water, that I remember I have examined; yet, having for Curiosities sake, made tryal of Snow Water (which if the Weather had been somewhat milder, would have been Rain,) this Liquor, I say, which is thought to afford the lightest Water of all natural ones, I manifestly found by our way of examining of it, not to be devoid of saltness.

XV. But to return to the Tryal we made with Spirit of Salt, these Experiments may not a little confirm the freshness of the Patentees Water. And whereas some have really inspected, or invidiously pretended, that even a moderate Action of the Fire upon the Water, will make it brackish and putrify; as I see no substantial Grounds of this surmise, so it appears by the foregoing Tryals, that really the Patentees Water is not brackish, but is more free from saltness, than most of the Waters Men do without scruple drink: And if it were true,

true, that this Water should not keep quite so long as others, yet that were no more than is objected (how truly I now enquire not) to the generality of distilled Waters : And that this we speak of, may keep sweet longer than is necessary in a Ship, that can from time to time, within a few Days, supply it self with fresh out of the Sea, may be gathered from these two things. The *first* is, That to satisfy my self, whether closeness would make the prepared Water soon putrify (as seemed obvious to be surmized) or at least afford dreggs, I caused a pint or a pound of it, to be hermetically sealed in a Vial, whereof I left by guess about a third Part empty, and having above six Weeks after held this Vial against the Light, I found the Water to be clear and limpid ; though I did not judge it had deposited so much as the tenth part of a grain of Feculency. And having opened the Seal, and taken out a little of the Liquor, I did not find it altered as to smell or taste. The *second* of the two things, that were to be mentioned is, that I have kept the Bottle of prepared Water, mentioned in my Letter to Dr. Beal, in the same unstopped Vessel, ever since *March*, that is so long, that it is now near eight Months old, and yet continues sweet and well conditioned. And if that which is called Crudity in Water does consist (as probably it oftentimes does) in certain gross Particles, that are mingled with the purely aqueous ones, it is likely, that the action of the Fire, may divide and dissipate these into minuter Particles, and thereby destroy the Texture that makes them hurtful ;

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and by causing innumerable tumblings and ro-
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them opportunity, to make little Coalitions,
whose weight precipitating them to the bottom,
frees the pure Water from them.

XVI. And because it is but too probable, that
the unwholesomness of divers Waters, proceeds
not only, or perhaps not so much, from bare
Crudity, as from a great quantity of grosser Par-
ticles, that are not easily to be raised, because
of their being combined with fixt and earthy
ones, that swim up and down in the Water
they impregnate, as Silver or Mercury does in
a Solution made with *aqua fortis*; or rather, as
the Particles of Salt do in Pump Water, and
many other common Waters: on this Account,
I say, the Patentees Invention may much cor-
rect those Waters, since by their way of sweet-
ning those Liquors, the truly aqueous Parts are
not only freed from the saline ones, but from
the mineral, and other gross and hurtful Cor-
puscles, that may have been concealed in the
Liquor. As may be argued from hence, that
having purposely in the gentle Fire of a dige-
stive Furnace, slowly distilled off a Pound of
the Patentees Water, it left us in the cucurbit
so light and thin a Feculency, that the bottom
of the Glass seemed to be rather sullied than
covered with it; and I did not judg that the
whole feculency, if we could have got it out,
would have amounted to so much as two
grains.

XVII. But to return, after this short, and I
hope not impertinent Digression, to what I was
lately saying, of the Vertue of the Fire to cor-
rect

rect the crudity of Waters. I shall proceed, and say, 'twas perhaps upon some such Reasons (to which others might be added, if I could in few Words confirm Paradoxical ones) that the last great Duke of *Tuscany* when he drunk Water (for it was not, as I perceive, some have misunderstood, his only Drink) preferred for the wholesomest, that which was distilled, before that which was not ; and if herein, that Learned Prince, and those of the same Opinion, were not mistaken, it will highly recommend the Usefulness of the Patentees Invention to Mankind : For I shall on this Occasion observe, that there are multitudes of Waters, that are not considerably brackish to the Taste, that yet, by Reason of some unheeded saltness, as in most Pump Waters, are more frequently, by reason of Crudity, not only unfit, or at least less fit, for divers Oeconomical Uses, as washing, boyling of some Meats, &c. but are very unwholesom, sometimes to a degree that makes them mischievous to whole Communities, and perhaps Nations: Of this it were to be wished, that it were harder to give instances. I remember, I have seen a notable one, in those hugh and unsightly Tumours about the Throat, which are observed by Travellers to be exceeding common, amongst those that inhabit the lower Tracts of Ground, that lye between the *Rhetian, Helvetian*, and some other Neighbouring Mountains ; which monstrous Swellings are generally imputed to the Snow Waters, that flow from the Mountains, and make the usual Drink of the meaner sort of People ; whence it is observed, that Persons of better condition, who drink
Wine

Wine more than Water, are either not all, or far less troubled with those disfiguring *Goitres* (as they call them.) But much more Noble Instances to our present purpose are afforded me, by that great and yet living Traveller *Monsieur Tavernier*, who *Part II. Book II. Chap. 23. Pag. 156.* speaking of a Notion of *Cafres* or *Negroes*, that comes sometimes to trade with the *Portugees*, from a remoter Part of *Africk*, informs us, *That the Water of their Country is very bad, which is, says he, the Reason that their Thighs do swell, and it is a wonder to see any one of them free.* Nay, which is far more, where he speaks of the *African Kingdom or Empire of Monomotapa*, he hath this memorable Passage, *The Natives never live long, by Reason of the badness of the Waters of the Country. For at the Age of twenty five, they begin to be Dropsical, so that it is a great wonder if any of them live above forty Years.*

XVIII. What *Monsieur Tavernier* delivers being taken for granted, it seems very probable, that these People may be much relieved, and be brought to live as long as other Nations, if they had so compendious a way as that of the *Patentees*, to provide themselves plentifully with Waters, whose Crudity is corrected, it's grosser and heavier Parts separated, and it's brackishness destroyed by the Fire, as it's action is regulated and helped by their Invention.

The Experiment mentioned in this Paper, was tryed at a meeting of the *Royal Society*, Feb. 17. 169 $\frac{1}{2}$ by Dr. *Slone* with a success answerable to the Assertions of the Honourable Author, and that a drop or two of Spirit of Salt mixed with common Water, would be by the same method discovered. c c Thus

*A brief Re-
capitulati-
on of his Per-
formances.*

Thus far we have not only given a brief Account of the Honourable Mr. *Boyl's* Writings, which Witness the large Extent of his Wisdom and Knowledg, but have likewise gathered together those loose Fragments, which entertained some Part of his Leisure hours, and which were a kind of studious Diversion to one whose chief Delight was to improve Natural Knowledg and promote the good of Mankind.

And though these small Additions to the Common-wealth of Learning, were but inconsiderable in respect of his larger Specimens and Improvements; yet they serve as great Instances, to shew how great a Benefactor to, and Promoter he was of Learning and Knowledg; for from hence it appears, that he was not only assiduous and constant in the pursuit of Knowledg, himself, but by his great Example and Universal Acquaintance, he excited others to do the same, in all Parts of the World; both at home and abroad, raising in all an Emulation, and Desire to follow so great a Pattern, tho' they came short in the Performance, and all were glad of an Opportunity, by communicating their Mites, to let him know they gladly endeavoured to pursue the same Game.

To be brief, he not only employed his own time to the best Advantage, but contrived Work both for the *Virtuosi* in his own Country, and Foreign Parts, who were glad to be set at Work by so skillful a Task Master, and were proud of receiving his Instructions; so that he was amongst the Learned, as the Sun amongst the Inferior Orbs above, every way diffusing the Beams

Beams of his Knowledg, and illuminating those about him on every side, who appeared more Eminent for what they received at his Hands.

He was the Universal Example, not only of Industry in Improvements of Natural Knowledg, but also of Piety and Vertue; making the later the chief Aim and Scope of all his Natural Acquirements; so that his whole Life was spent in doing Good to Himself and Mankind; converting all his Knowledg to the Glory of God, and the Good of his own Soul; so that in the Words of the Learned *Bp. Burnet*, we may say; "You have thus far seen, in a very few hints, the several Sorts and Instances of Goodness, that appeared in this Life, which hath now it's Period; that which gives Value and Lustre to them all, was, that whatever he might be in the sight of Men, how pure & spotless soever, those who knew him the best, have Reason to conclude, that he was much more so in the sight of God.

He had too great a Sence of God's Justice, *His* and his own Duty, and of the Rewards and *Thoughts of* Punishments in another World, to neglect a *God's Justice.* thing of such everlasting Consequence, in his whole Life, and throughout the whole Course of it, taking care to secure himself a certain hope of that Happiness which he now enjoys. He knew and foresaw the sad Event and Effects of a sinful Course of Life, and therefore took care to make his Calling and Election sure, avoiding all those sinful Pleasures, which might endanger his future Hopes of Happiness; for says he; though such obdurate Epicures God often suffers

fers to continue in their sins, till *their Iniquities filling up their determinate Measure*, Gen. 15. 16. he often makes their sins take them off in the height of their Enjoyments, and precipitates them from the Pinnacle of their Delights into the *Place of Torments*, Luk. 16. 28. where the Sweets of Sin afford *Bitterness in the later end*, 2. Sam. 2. 26. where they are convinced of the folly of gaining any thing at the Loss of their Souls. Thus says he, the *Israelitish Prince* found a *Nerasis* to violate the Sanctuary of his Mistresses Arms, and to extinguish his Lustful Flames with the Cold blasts of Death, Numb. 25. And those that loathed Manna and Lusted after Flesh, were supplied with Quails; but *whilst the Flesh was yet betwixt their Teeth, 'ere it was chewed*, Death choaked them with it, devouring them as greedily as they did the Birds, Numb. 11. 33. ——— and the revelling *Belshazzar* in the midst of his Royal Feast, saw the Hand writing on the Wall, which took away the Enjoyment without Spoiling the Dainties. And that Monarch whom a Siege could not hinder from Feasting, was at the last surprized, his trembling hand presaging his Destiny under the Ensigns of *Cyrus*, whose Sword guided by the hand of Providence, the same Night let out both his Wine which he drank out of consecrated Cups, and also his Blood and Life together.

His Thoughts of Boyle, But though this great and good Man Mr. Boyle, lived a Life which appeared to all Mankind so pure and spotless, that he had no need to be afraid of those Terrors which attend the Wicked and Unjust, and lived such a Godly

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and Pious Life, that he had more Cause to rejoyce than he afraid of a Translation into the other World, yet he had just Sentiments of that great Duty of Repentance, and exhorts us, to pursue the same, which ought to be done in due time, and not to be deferred till it may be uncertain, whether it will be effectual, and have the true signs of sincerity. For says he, if we consider the Duties and Mortifications requisite to remove us from a state of Sin to a state of Grace, it requires good Resolutions to undertake the Conditions of Piety, through so many difficulties as will present themselves to our affrighted Imaginations. And reflecting on the Number of Medicines he had taken in a fit of sickness, says he, it's true, were all the Medicines to be taken at once, or a tenth Part; they would have killed me in one day, but tho' I see them all at once, says he, I took them but by degrees, and assisted by moderate Intervals of respite, I was enabled to bear them, supported by seasonable Cordials, and that chief one the hopes of recovery, and of being freed from the use of them. And thus though the hardships of Piety are presented at once to one that is to be a Convert; yet he is to strive with them, but by one at once, and may overcome a Temptation one day, and another the next; so that what our Saviour says may be applied in this Case of our not being solicitous for to Morrow, nor charging one day with more than belongs to it. And as a Physitian takes care, that his Remedies shall not be disproportionate to the Patients strength, and to relieve him afterwards with Cordials; so God will not suf-

fer us to be tempted above what we are able ; but will allow us Comfort, if he does not turn our Sufferings into Cordials. If says he, a Convert considers these things, the Difficulties will not discourage him, but will rather enable and indear his Success, where he is sure God will assist him in the Victory, and give him Heaven for a Reward.

And to encourage and excite us to forsake the foolish Vanities of this World, he elsewhere says, whilst a great many flattering outward Objects invite us, how apt are we to wander from God ; but when deprived of those Allurements, our Maker is free from Rivals, and our Affections chuse the noblest Object, by removing, as well as they would by the undervaluing, and the Knowledg of Inferiors. Lord ! says Mr. Boyle, when I loose a Friend, or any idle Fondness, let that loss transfer and settie my thoughts on thee, and if thou vouchsafe to make me so happy, I shall not envy him whom the loss of his Asses made him find a Crown ; and shall not so much be concerned at what thy Dispensations have bereft me of, as I shall congratulate their having reduced me unto thee.

And to encourage us further to forsake Sin and turn unto God, reflecting upon the Objects represented by a Prismatical Glass, he says, this Glass instructs as well as delights, and by deceiving teaches ; for when God looks upon sinful Christians, polluted and disfigured with sin, they appear loathsom to him, *who is of purer Eyes than to behold Iniquity*, but through Christ, our filthiness appears Lovely, if not
Glorious,

Glorious, and as some Objects, as White and Flames, appear better through this Glass, than dirty and ordinary ones; yet the worst appear better through it, than the richest without it; To notwithstanding the difference betwixt the most Innocent and Exemplary, and the frailer Children of God, when we look through Christ, they are more acceptable to God, than the others, considering them only on the Account of Morality. And looking through the Prison, alters not the Nature of the Objects, which it leaves as homely and foul as before, God's gracious Aspects through Christ, makes us by degrees fit Objects of his Delight, and hath a Transfiguring Power like the Sun, which Cherishes and Paints unblown Flowers with their Natural Colours, by his looking on them, since, then we are both reconciled to God, and ingratiated to him in the Beloved, what Gratitude do we owe to God the Son, who hath made us appear so lovely to his Father, it being the highest Honour, which leads to the highest Happiness.

And to shew us further the Danger of continuing in a sinful State, and the Satisfaction of forsaking it, he says, when a Man is lulled a sleep in sensual Pleasures, he hath the faculty, but not the use of Reason, taking his Dreams for Realities; and if a serious Divine would out of a Concern for his Soul, or the Glory of God, awake him out of that state, such attempts are looked upon at first as unseasonable and unwelcome, as the Light to one that is awaked out of sleep, and instead of looking upon him as a Friend, he's apt to check & expostulate with him

as an Enemy. But if by God's Blessing he comes to be thoroughly awaked, he presently perceives that he is brought out of the Kingdom of Darkness into a Marvelous Light, and instead of empty Dreams that deluded him, and to relish which the Eyes of his Mind must be as much closed as those of his Body, he is then admitted to Manly Entertainment, such as Reason chooses, Conscience applauds, and God approves.

Hence it appears, what care he took to lay a good Foundation for a future Hope. What further thoughts he had on this Subject, appears from what he hath offered before, in his Reflections on a Death Bed Repentance in a former fit of Sickness.

*His Hopes
hereafter.*

And as he thus encouraged and exhorted others to the Pursuit of Vertue and Piety; so he made them his constant Pursuit and Practice, which afforded him a lively hope of the fruition of those Joys which continue for ever, in that happy state which will have no end; which always disposed and prepared him to a free resignation to the Will of God, whenever it should please him to call him to that Heavenly Habitation, the Reward of his good Works and a well spent Life; so that to use the Learned Bishop Burnet's Words, "The Sence of his own Integrity, and of the Good he found it did, afforded him the utmost of all Pleasures, since they gave him the certain Prospect of that fulness of Joy, in the sight of which he lived so long, and in the Possession of which he now lives, and shall live for ever, and his spent and exhausted Body shall then put on a new Form, and be made a fit dwelling, for that pure

'pure and exalted Mind at the final Restitution; of which he had a great deal of Reason to be a happy Partaker.

To demonstrate the Confidence he had in the Hopes of Eternal Salvation, and the great Reason he had for such hopes, we shall briefly take Notice of some Passages in his Writings, which make his Expectations appear to be grounded upon the firmest Basis, which a Christian might hope for future Happiness.

That he had a well grounded Hope of Happiness in the other World, appears from hence, for speaking of the uncertainty of Human Attainments in this Life, he says, a great many famous Writers, after a great deal of Pains to square the Circle, and double the Cube, have not only met with disappointment, but with disgrace. And notwithstanding the pains to find out Longitude, and to make certain Astrological Predictions, their endeavours have proved Useless. But God, *that made the World, and all things therein, and is Lord of Heaven and Earth,* seeks not our Services, as if he wanted any thing, *seeing he giveth Life and Breath, and all Things.* For in our Obedience he seeks to reward us; prescribing us Services suitable to our Rational Nature, which may prevail with his Justice to make us happy. Thus *Abraham* is said to have been *justified by Faith, when he offered his Son Isaac upon the Altar, Jam. 2. 21.* God graciously accepting the Will for the Deed, and the Blood of the Ram instead of his Sons. And though *Solomon* and not *David* built the Temple at *Jerusalem*, God said to the later, *for as much as it was in thine Heart to build a House for*

for my Name, thou didst well in that it was in thine Heart; notwithstanding thou shalt not build the House, &c. 2 Chron. 6. 9. and 2. Sam. 7. David declaring his Will to build God a House, the Almighty honoured him as once he did Moses, with the Title of his Servant, *vers. 5.* and bid the Prophet say to him, *Also the Lord tells thee, that he will make thee a House, vers. 2.* God accepting his Intentions. And since the designs and endeavours are ours, and the Events are in God's Hands, Providence will not suffer us to be loosers by our Endeavours, either crowning them with success, or some other recompence. If we consider, that God's Goodness is over all his Works, *Heb. 1. 13.* and that his purer Eyes punish, as well as discern, Murther and Adultery in the Heart, we need not doubt, but he will recompence pious Attempts. Our Saviour says, *Blessed are they that Hunger and Thirst after Righteousness, Mat. 5. 6.* for they shall be Satisfyed; so that a desire after Spiritual Grace, may entitle a Man to the Possession of it, though not in this Life, yet in the World to come; where we shall not walk by Faith, but by Sight, *2 Cor. 5. 7.* acquiring Endowments fit for so glorious a State, where we shall be equal to Angels.

And to shew further, the firm grounds of his Hope, he elsewhere says, St. Paul might well ascribe to our Saviour, *That he had brought Life and Immortality to Life through the Gospel, 2 Tim. 1. 10.* And as Hope is the greatest Motive to engage Men in a Vertuous Life, St. Peter says, a Christian Hope depends on a revealed Truth, and thanks God, *who according to his abundant Mercy,*

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Mercy, begat us to a lively Hope, by the Resurrection of Jesus Christ from the Dead, 1 Pet. 1. 3. And what Hopes, through the Influence the Scripture gives us, of the Knowledg of God and Christ, we may have of a good Life, and thro' the Promises that none but he can make, or those that he sent, will appear from what the same Apostle says, That God according to his divine Power, gives us all things that pertain to Life and Godliness, through the Knowledg of him that hath called us to Glory and Vertue, 2 Pet. 1. 2, 3, 4. and he after tells us of being made Partakers of the Divine Nature, escaping the Corruption that is in the Flesh through Lust, by those Promises God hath made us.

And to manifest further, his Hopes of a future State, in another place he says, in the Work of Man's Redemption, there are some Footsteps of Divine Wisdom so conspicuous, that Men of ordinary Parts discover them. But some Parts of this Work are so sublime, and contain so much of the Wisdom of God in a Mystery, that Human Understandings are not able to handle so abstruse a Subject. It requiring, that Man should know in a great Measure, the Nature of Spirits, and of the Father of them, God himself, likewise of the Will, Intellect, &c. as also of the Soul of Man, Adam's State in Paradise, as also, what Influence his Fall had on his Posterity, and the Nature of God's natural and vindictive Justice; the Ends of Gods inflicting Punishment, the Unparalleled Person of Christ, the Qualifications requisite for his being our Redeemer, the Conditions God made with Man, in respect both of Works and Grace;
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God's Decrees with respect to a future State, the secret and powerful Effects of Grace, and how the Spirit of God influences Men's Souls, which he converts and sanctifies to Glory, I say, there are so many things to be considered to treat of Christ's Redemption, that we may say with St. Paul, *who is sufficient for these things*, so that it being beyond the reach of Human Capacities, we have the more Reason to admire the Wisdom of it.

And as he had a firm belief of the Mystery of Man's Redemption, and hath written a Tract to shew the Possibility of the Resurrection; so he had sufficient grounds for firm Hopes of the good Effects of his Faith, since he might expect, as the Prophet says, *That those that turn others to Righteousness shall shine for ever and ever*, which since he made it his constant Endeavour, it might reasonably give him Hopes, that God himself, whose Bounty is inexhaustible, will recompence his Work.

And to shew further the lively grounds of his Hopes, we shall observe what he elsewhere says, to shew the greatness of God's Love to us, and which he might very well expect upon very good Terms, says he, God conferred on us the Blessing promised to his Antient People, whom he assured, *that he would love them freely*, Hof. 4. 14. he loved us both when we were not at all, and when we were his Enemies. *If when we were Enemies we were reconciled to God, by the Death of his Son. &c. Rom. 5. 10.* Before we existed indeed, nothing could be a Motive to the Love of God, and when we were Enemies, *God commended his Love towards us,*

in that whilst we were yet Sinners Christ dyed for us, Rom. 5. 8. and when we had no other Motives for his Love, except the want of them, Yet God so loved the World, that he gave his only begotten Son, John 3. 16. who also so loved us, that he being in the form God, thought it no Robbery to be equal with God, but made himself of no Reputation, and took upon him the form of a Servant, and was made in the likeness of Man. And being found in fashion as a Man, he humbled himself, and became obedient unto Death, even the Death of the Cross, Phil. 6. 7, 8. he loving at no less rate than Death, suffering the extreamest Indignities, debasing himself to Exalt us, He was wounded for our Transgressions, he was bruised for our Iniquities, the Chastisement of our Peace was upon him, and with his Stripes we are healed, Isa. 53. 5. For ye know the Grace of our Lord Jesus Christ, that though he was rich, yet for your sakes he became poor, that ye through his Poverty might be made Rich, 2 Cor. 8. 9. Men having displeased God, and forfeited Happines, and though in a forlorn Condition, were careless of the means of Recovery, as well as incapable of contriving them; yet then his Love contrived Expedients to reconcile his Justice and Mercy, and Sinners to himself. Viz. by the Incarnation of his Son, which was so advantageous to us, and so wonderful, that the Angels desire to look into those Divine Mysteries.

And further, to shew the grounds of his Hopes, he says, it is much disputed, whether God could contrive to reconcile the Expiation of Sin, without violating his Justice, any other way, than by the Passion and Death of Christ, but

but whether he could or not, he hath chosen the most obliging way, the manner of our Rescue displaying the severest Justice, and the highest Mercy; the greatest hatred of Sin, and the greatest Love to Sinners, delivering up that Son for us, who was so near to him, that he truly said, *I and the Father are one*, John 10. 30. whom he gave for a Ransom for those that were guilty of what he hated ——— and to let us know, that *by his Stripes we are healed*, Isaiah 53. 5. we read, that he never rejoyced, but when his returned Disciples told him, they had chased *Devils and Diseases* out of *oppressed Mortals*, and that by his Authority, Men had been *dispossessed*, Luke 10. He conversed with Vertues, and shewed, what he was by Prophecies and Miracles, and often suspended the Course of Nature, to let Man see, that he valued him above those Creatures he Idolizes, and reversed the Laws of the Universe, to bring us to the Obedience of Gods.

And to manifest farther the Grounds of his Hopes, in another place he says, our Saviour tells us, *there is joy in the presence of the Angels over one Sinner that repenteth*, Luke 15. 7, 10. and the sole Hymn of the Celestial Choir, Luke 2. 13, 14. was for a Blessing to Mankind, *For unto us the Child is born, and unto us the Son is given*, Isa. 9. 6. *who took not upon him the Nature of Angels, but the Seed of Abraham*, Heb. 2. 16.

And further he says, we shall not here tell you, what we think of Predestination so much disputed. Those that are truly Pious, whether Calvinists or Remonstrants, are perhaps more esteemed by God Almighty, than one another,
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the one thinking to magnify his Goodness, and the other contending to secure his Justice. Yet in honouring Goodness, both Parties seem Rivals; the one thinking it most celebrated by allowing it irresistible to whom Happiness was designed, and the other thinking it Universal, & that every Body may be happy if he pleases, the one assigning free Grace an unlimited Extent, and the other ascribing it an infallible victorious Degree. But, says Mr. Boyle, not to enter upon these Controversies, the Doctrin of Predestination is grounded on, is rejected by most; nor is it necessary to justify the Greatness of God's Love; for it is so evident, that God is the Author of Man's Felicity, that the Dispute is not so much about the thing as the manner of it's being performed, the *Calvenists* maintaining Grace irresistably offered, and the others granting it not only free and undeserved, but that the Offer enables those it is presented to, to accept it; so that Man needs contribute nothing to his felicity, but the acceptance of it, and thus properly may be said to owe it to God. Christ says he, payed *Ransom to redeem us*, and is called *the Lord that bought us*, but as God provided that Ransom it was the Effect, not of his Justice but his Love. *He sent his only begotten Son to redeem us*, John 3. 16. And St. Paul tells us, *we are justified freely by his Grace*, Rom. 3. 24. *through the Redemption that is in Jesus Christ*; for our Merit can deserve nothing as a due, except as his Promise hath made it so, and we owe to his Mercy the right we have to his Justice. Though St. Paul having *Fought the good Fight, finished his Course, and kept the Faith*, 2 Tim.

Tim. 4. ver. 7, 8. and expected a Crown of Righteousness from the Lord, as the Righteous Judge; yet he tells us; 2 Pet. 1. 4. By Grace we are saved through Faith, and that not of our selves, it is the Gift of God. but the making us these great and precious Promises, is the Effect of his free and undeserved Goodness, 2 Pet. 1. 4. since as we are his Creatures, he might expect what service, he pleased, without the Recompence of Eternal Glory, since we must acknowledg our selves unprofitable Servants, who have done but what was our Duty to do, Luk. 17. 10. and what if we had omitted we had been liable to be punished for.

And further, he elsewhere tells us, that the Scripture advises us, *Let us therefore fear; least a Promise being left us of entering into his Rest, any of you should seem to come short of it, Heb. 4. 1. and St. Paul tells us, I keep under my Body, and bring it into Subjection, lest by any means, when I have Preached to others, I myself should be a cast away, 1. Cor. 9. 27. And Christ himself gives us this Admonition, I say unto my Friends, be not afraid of them that kill the Body, and after that have no more that they can do: But I will forewarn you whom you shall fear; fear him which after he hath killed, hath Power to cast you into Hell, I say unto you, fear him, Luk. 12. 4, 5. where we are not only told, who we are to fear, but are told the Reason why we ought to do so. And St. Paul says, I know whom I have entrusted, how faithful and how omnipotent, 1 Pet. 4. 19. whence he adds, and I perswaded, that he is able to keep, that which I have committed unto him, against that Day, 2 Tim. 1. 12. To which we shall*

shall add the following, *I press towards the Mark of the high Calling of God in Christ Jesus, Phil. 3. 14. Blessed are they that do his Commandments, that they may have a right to the Tree of Life, and may enter in through the Gates into the City, Rev. 22. 14. Laying up in store for themselves a good Foundation against the time to come, that they may lay hold on Eternal Life, 1 Tim. 6. 19. To them who by Patient Continuance in well doing, seek for Glory, and Honour, and Immortality, Eternal Life, Rom. 2. 17. And it was said of Christ; whose Love no doubt was filial, Looking unto Jesus the Author and Finisher of our Faith, who for the Joy that was set before him, endured the Cross, despised the Shame, and is set down at the right Hand of the Throne of God, Heb. 12. 22. Nor does it appear unfilial for a Child of God, to raise those Passions, which his Father designed to promote in him upon the same Motives God made use to excite them. The Scripture plainly says he invites our hopes, Every Man, says St. Paul, that striveth for the Mastery is temperate in all things now they do it to obtain a Corruptible Crown, but we an Incorruptible, 1 Cor. 9. 25. And our Saviour is represented in one place, saying, rejoyce and be exceeding glad, for great is your reward in Heaven, Mat. 5. 12. and again, be thou faithful unto the End, and I will give thee a Crown of Life, Rev. 2. 10. since the Scripture thus allures our hopes, it cannot be sinful to cherish the Passions Naturally belonging to those Objects.*

Since then it appears, what lively hope Mr. Boyle had of a future happy state, which that and his other Christian Vertues, which he excelled in, might justly expect, we shall venture to say some thing of that Period of his Life, which

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conveyed him from this, to Life Everlasting, and which by putting an End to the Practice of his Vertues, gave a beginning to the Fruition of his Rewards, viz. a Glorious Crown of Righteousness.

His Death.

He was so very sensible and apprehensive of what might attend the Circumstances of his feeble Constitution, as well as other Symptoms of Distempers he was Subject to, that he took all the Caution he could to prevent them. To use the Words of the Learned Bishop Burnet; "He did also imagin, that if Sickness obliged him to lye long a Bed, it might raise the Pains of the Stone in him, to a degree that was above his weak Strength to bear; so that he feared his last Minutes might be too hard for him; And this was the Root of all the Caution and Apprehension he was observed to live in. But as to Life it self, he had the just indifference to it, that became so true a Christian. I mention these the rather, that I may have occasion to shew the Goodness of God to him in the two other things that he feared; for his sight began not to grow dim above four hours before he dyed; and when Death came upon him, he had not been above three hours a Bed, before it made an End of him, with so little uneasiness, that it was plain the Light went out, meerly for want of Oyle to maintrian the Flame. He dyed the 30th. Day of December, 1691. in the 64th. Year of his Age, about a Week after his Sister the Lady Renelaugh, with whom he had lived Forty Years.

Thus we have given a brief Account of the Life and Period of the Honourable Mr Rob. Boyle, whose

whose just Memory will always survive him on Earth, whilst his Immortal Soul enjoys Eternal Felicity in Heaven, exalted amongst Saints & Angels, with whom he conversed even on Earth; we shall therefore conclude with the Expressions of the Learned Bishop *Burnet*, and end the Final Character of this great Philosopher and as good a Christian, in his Words. "The only thought that is now before us, is to Triumph in the behalf of Religion, to make our due boast of it, and to be lifted up, I had almost said proud upon this occasion; how divine and how pure a thing must that Religion be in it self, which produced so long a Series of great Effects, thro' the whole Course of this shining Life? What a thing would Mankind become if we had many such? And how little need would there be of many Books writ for Truth and Excellency of our Religion, if we had more such Arguments as this one Life hath produced? Such single Instances have great force in them; but when they are so very single, they lose much of their strength by this, that they are ascribed to singularity, and something particular in a Man's humour and inclinations, that makes him rise above common Measures. It were a Monopoly for any Family or Set of Men, to engross to themselves the honour which arises from the Memory of so great a Man. It is a Common not to be inclosed. It is large enough to make a whole Nation, as well as the Age he lived in, look big and be happy: But above all, it gives a new strength, as well as it sets a new Pattern to all that are sincerely Zealous for their Religion. It shews them in the simplest & most convincing of all Arguments, what human Nature is capable of, and what the Christian

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'stian Religion can add to it, how far it can
 'both exalt and reward it. I do not say, that
 'every one is capable of what he grew to; I
 'am very sensible that few are; nor is every
 'one under equal Obligations: For the Service
 'of the Universe there must be a vast diversity in
 'Men's tempers, there being so great a variety
 'of necessities to be answered by them; but e-
 'very Man in every Employment, and of every
 'size of Soul, is capable of being in some degree
 'good in the sight of God; and all such shall
 'receive proportioned Degrees of Wisdom,
 'Knowledg and Joy; even though neither their
 'Goodness, nor Accessions to it, rise up to the
 'Measure of him that was a while amongst us,
 'indeed *One of a Thousand*, and is now but one
 'of those *ten times ten Thousand* that are about the
 'Throne; where he is singing that Song which
 'was his great Entertainment here; as it's now
 'his endless Joy there; *Great and Marvelous are*
 '*thy Works, O Lord God Almighty; and just and*
 '*true are thy ways, O King of Saints.*

FINIS.

TO THE
READER.

WHen we undertook to write an Epitomy of the Honourable Mr. Boyle's Theological Works, the following Tract not being commonly mentioned in the Lists of his Writings, nor having his Name prefixed, it was doubted, whether he was the Author of it or not; by some who did not commonly reckon it amongst the number of his Works; especially since it appeared not only without his Name; but with Letters of a Name much different from his, but when we saw it in the List of his Works, given by Mr. Collier, in his great Dictionary, and upon that Account examined and read over the Tract it self, finding the Notions there delivered to quadrate with other Parts of his Writings, and to be built upon a similar way of Arguing, we could not but conclude that Noble Person the Author of it; nor could we imagin any other Reason for his concealing of his Name, except that Christian Temper which concealed a great many of his good Works, I mean his Charity upon a great many occasions; for as he was very liberal to several Persons without letting them know from whence that Bounty came; so the same Disposition might influence him, to communicate this serviceable Book secretly, that it might have an unprejudiced Effect, whose Reward will be returned openly, and which he now enjoys.

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Had we been convinced that it was his before the rest of his Works were Printed, we should have placed it after the Christian Virtuoso in the first Part of the first Book of his Works, but since those two Volumes were Printed, before we had read this Noble Tract, that his Works might not be imperfect, we have added it to his Life, as an Appendix to that first Part of the first Book of the Epitomy; for as in the Christian Virtuoso, he not only shews, how Natural Philosophy may be serviceable in leading us to the Knowledge of Natural Religion, but likewise furnishes us with Arguments to prove the truth of the Christian Religion; so in this Tract he makes it appear, that Reason leads us to the Knowledge, and helps to confirm our Belief of the Truth of that Religion, shewing by several Instances, that several things are believed in other Cases, where the Proof is much more uncertain than what we have of the Truth of Christianity, so that this Tract seems to be a Confirmation of what he hath delivered in the Christian Virtuoso. I am

The Readers,

Humble Servant

Richard Boulton.

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APPENDIX

TO THE

First PART

OF THE

First BOOK

OF THE

EPITOMY

OF

Mr. Boyle's Theological WORKS.

Containing some Considerations about the Reconcilableness of Reason and Religion.

T Hough it be a mistake amongst many, to think, that to embrace our Religion, we must renounce our Reason; and that to be a Christian, one must cease to be a Man, and what is more, forsake being a Philosopher, yet I must make this Negative Answer, *That I do not think, that a*

The Introduction.

d d 4 *Christian,*

Christian, to be truly so, is obliged to forego his Reason; either by denying the Dictates of right Reason, or by laying aside the Use of it. In order to make this Assertion good, we shall both offer some positive Inducements, that lead us to this Opinion, and produce some others, which may answer such Objections as may probably be alledged against it.

And here we would have it noted, that our design is not so much to offer positive Proofs of the Christian Religion, as to shew that the Essential Doctrins of the Christian Religion, are not repugnant to the Principles of Natural Philosophy, and that a Man needs not cease to be a Rational Creature, or to reject Philosophical Tenets, to embrace Religion. Nor are we solicitous to vindicate the Christians Belief of a Deity from being irrational, since the acknowledgment of it is so far from blemishing a Christians Reason, that it hath been esteemed reasonable by all Philosophers, who without Revelation, have been only guided by Reason. And as I think the *Atheists* Philosophical Objections, not near so considerable, as some of them, and all others may esteem them; so a Christian is not obliged to make his Faith of a Deity, a mere *Postulatum*, since besides Philosophical Arguments, he may alledge sufficient Historical Proofs, the Miracles which were wrought by Christ and his Followers, being undeniable Proofs of the Christian Religion, and that God must be the Author of them.

But to pursue our proposed design, We might first shew, that the Precepts of Christianity do not oblige us to lay aside our Reason in Matters

of

of Religion, and that the Christian Doctrine contains nothing that obliges us to do so. But to invert the Order, we shall first consider the principal Difficulty, *Whether there be a Necessity for a Christian to deny his Reason*, and then we shall examin, whether though he needs not, it is his Duty to disclaim his Reason.

But to proceed, to the Considerations proposed in this Discourse. *I shall in the first place distinguish betwixt that which the Christian Religion it self teaches, and that which is taught by this or that Church or Sect of Christians, and much more by this or that particular Divine or Schoolman.* That many things are taught concerning the Attributes and Decrees of God, the Mysteries of the Trinity, the Incarnation, and other Theological Subjects, about which private Christians, as well as Churches of Christians disagree, is very evident. Some Men, through Ambition, Boldness, Self-conceit or Interest, are apt to intrude things, as parts of Religion on others, which are both Strangers and Enemies to it, and others by indiscreet Devotion, are apt to increase the Number and Wonderfulness of Mysteries, as if *Faith* was not to elevate, but to trample upon Reason, or that things not clearly to be proved or understood, were fittest to be believed. If indeed we consider, the charitable designs of the Gospel, and the candid simplicity of it's Doctrine; and what wild Speculations and Inferences have been father'd upon it, by Metaphysical Writings, and the Articles of Faith of some Churches, the Apostles themselves would be puzzled with these Doctrins, and St. Paul as well as *Aristotle* would disapprove many of those

The First Consideration.

those nice Points, which would be as little entertained by an Orthodox Divine, as a Rigid Philosopher. Therefore I cannot approve all as Gospel, that is delivered in a Pulpit, or even a Professors Chair: And if Scholastick Writers impose upon the Christian Religion, Metaphysical Speculations, or Human Doctrins, as Matters of Faith, I who think Metaphysics neither well understood nor well applyed, shall deny that it will follow, that though such Doctrins adopted into the Number of Christian Vertues, should be found inconsistent with right Reason, that the Christian Religion must be so too; which only consists of that System of Revealed Truths clearly delivered in Scripture, or what is regularly deduced from it.

*The Second
Consideration.*

But Secondly, In the next place, among things that seem not Rational in Religion, I make a great difference betwixt those in which unenlightened Reason is manifestly a competent Judge, and those which Natural Reason it self may discern to be out of it's Sphere. It is certain, that Natural Theology is sufficient to prove the Existence of a Deity; and many of the old Philosophers, unassisted by Revelation, were by force of Reason led to the Knowledge of a God, or a Being supremely perfect. And if there be such a Being, many things relating to his Nature, his Will and Management of things must needs be beyond the Sphere of Reason: for if our Reason cannot fully comprehend his Attributes and Perfections, our Conceptions of them must be inadequate; and if God is a Being different from all others, some things in his Nature and Manner of Existence, must be without Analogy in inferior Beings; for

for even in Man, the Coexistence and Union of the Soul and Body is without a President or Parallel in Nature. And though the Truth of this Union may be, the manner was never proved, nor ever will be clearly understood in this Life. And if God be Omnipotent, he must be able to perform, what no other Agent can Parallel, nor can we, whose Knowledg is finite, and judg of things by Analogy, conceive the manner of the Performance; as how a sufficient Quantity of the dispersed Matter of a dead Body may be recollected, and being reunited with the Soul, may reconstitute a living Man, and compleat the Resurrection, or how Matter was created out of Nothing; or how such Rational and Intelligent Beings as Human Souls were produced: As for Angels, meer Philosophy cannot evince their Existence, though it may the Possibility. And since God is as Wise as Powerful, such conspiring Attributes may produce Contrivances and frame Designs, which we cannot hope to Understand, much less Comprehend; so that there may be many things relating to a Deity above the reach of Human Reason. Not that all these things are incomprehensible when once proposed, but that Reason alone could not discover them, and therefore the Knowledg of them must be owing to Divine Revelation. And if God vouchsafes to discover to us, in respect of his Nature and Attributes, what we cannot know without his Information; and since we know, that whatever he says must be true, we have more Reason to believe what he says of himself and divine things, than what we should be able to guess

guess at about them, by the Anology of things of an infinitely distant Nature, or Maxims formed according to the Nature of inferior Things. If then he reveals to us, that there is in the Godhead, three distinct Persons, which make one God, since we believe God's Testimony in all other Cases, we ought to believe it concerning himself, and acknowledg, that in an Incomprehensible Being, there may be unparallelled manner of Existence, though we cannot understand it, since in our selves we cannot comprehend, how a Body and an Immaterial Spirit should be united, so as to make up one Man. And though in such Cases, our Reason seems to be captivated, yet our Reason obliges us to that Submission; and he who believes what Divine Writings teach, rather than what he might imagin without Information, does not renounce, but only suffers his Reason to be guided by an omniscient infallible Instructor, who can teach him more than his Reason, or any Body else could discover to him.

To confirm this Proposition, we shall make Use of the Testimony of a French *Virtuoso*, who speaking of a Paradox of *Galileo's*, that makes a Point equal to a Circle, he adds, consequently one may say, that all Circles are equal between themselves, each of them being equal to a point, where though the Imagination may be overcome by this *Idea* or Notion, Reason will allow it. To which he adds, I know several other Excellent Persons, who conclude the same thing other ways, but all acknowledg, that Indivisible and Infinite so drown the Mind of Man, that he is at a loss what to pitch on, when he con-

tem.

templates them; so that *Galileo* is not the only Philosopher, who hath confessed that the Attributes of Infinite went beyond his Reason.

Another Instance, which may confirm this Proposition, is, a Passage in the second Part of *Des Cartes* Principles of Philosophy, Numb. 34. where speaking of the Circle Matter makes, as it moves through places less and less, he says, *Estendum tamen est in motu isto aliquid reperiri, quod mens quidem Nostra percipit esse verum sed tamen quo pacto fiat non comprehendit, nempe divisionem quarundam particularum Materiae in infinitum, sive indefinitum, atq; in tot partes, ut nulla cogitatione determinare possimus tam exiguam, quin intelligamus ipsam in alias adhuc minores reipsa esse divisam.* And says he, though we cannot comprehend this indefinite division, we ought not to doubt of the Truth of it, since it is of such a Nature, as cannot be comprehended by our finite Understandings.

If Quantity then may puzzle the Reason of such extraordinary Wits, which is a Natural, nay Mathematical Object of Contemplation, and the Subject of the strictest Demonstrations in Mathematicks; why should we think much to believe or acknowledg, that God's Attributes who is Essentially an Infinite Being, and *ens singularissimum*, and several other things, which Revelation only gives us the Knowledge of, contain something our finite Understandings cannot comprehend.

But to proceed to the third Consideration, *The Third* which is, *That there is a great difference betwixt Considerations* a Doctrins being repugnant to the general and well on. weighed Rules of Reason, in the forming of which Rules

Rules it may be supposed to have been duly considered, and it's disagreeing with Axioms, at the Establishment whereof, the Doctrin in question was probably never thought of. There are indeed several Rules much esteemed, and useful when restrained to those things from which they arose, and others of the same Nature, which ought not to be used against those Divine Doctrins dissonant to them; for those Rules being built upon the Observation of Natural and Moral things, since Reason must acknowledge some things out of it's Sphere, it is possible, that though those Rules may hold in inferior Beings for which they were designed, they may not extend to that infinitely singular Being, God, and other Divine Matters, which were not considered, when those Rules were made. And if we consider God, as the Author of the Universe, and the Establisher of the Laws of Motion, whose Concourse is necessary to preserve the Effect of every particular Physical Agent, we must Acknowledge, that when he withholds his Concourse, or changes those Laws of Motion, which depend upon his Will, all the Axioms and Theorems of Natural Philosophy must be invalidated; these supposing the Established Laws of Motion amongst the Parts of the Universe, upon which all the Phenomena of Nature depend. It's a Rule in Natural Philosophy, that *Causa necessaria semper agunt quantum possunt*, but it follows not thence, that fire must burn Daniels three Companions, or their Cloaths, when cast into the fiery Furnace, when God Almighty withdrew his Concourse to the Operation of the Flames, or Supernaturally defended their

their Bodies. Philosophers have always taught, that when Men are Dead, they cannot be brought to Life again, which though true according to the Course of Nature, yet God may reunite the Soul to the Body, if the Organization be not too much vitiated; or he may so alter the fabrick of the Body as to make it fit to exercise the Function of the Body; and though Miraculous Effects are not to be attributed to Physical Agents, yet we may believe the same things when ascribed to God, or Agents assisted by his Supernatural Power. That a Man born blind should recover his sight by the application of Clay and Spittle, as incredible if done by Man, but we may believe, that the Son of God was able to perform it; and the like may be said of all those Miracles done by the Assistance of Divine Power. For it argues not our Belief irrational, because such things could not be done according to the Course of Nature, but they must be proved either impossible to the Power of God, or that the Records we have of them are not sufficient Testimonies, the later of which is foreign to our present Discourse. And as the Rules in respect of Agents will not all hold in God, neither will they in respect of some of his Attributes. For in point of Justice, where we think our selves competent Judges of what may or may not be done, in some Cases, God's supreme Dominion, as Maker and Governour of the World, sets him above some of those Rules, yet I say not above all those Rules of Justice, which oblige inferior Beings, and even Monarchs themselves. And not to mention his Power of pardoning and relaxing his own Right, his Power of Afflicting without any Provocation

vocation given may be an Instance. But we shall not enter upon a Controversie *de jure Dei in Creaturas*, either in relation to what it is founded on, or how far it extends; yet God by his Right of Dominion, without any Violation of the Laws of Justice, might have destroyed *Adam* and *Eve* before they transgressed, or had a Command layed upon them; for Man being a piece of God's Workmanship, unless obliged by Promise or Contract to limit his Power, he was no more obliged to preserve *Adam* and *Eve* long alive, than a Lamb or a Pidgeon; and therefore as he might take away the Lives he had given those Creatures, when he pleased so to let the Angels know his Power, or for other Reasons, he might have suddenly destroyed *Adam* and *Eve*, if he had pleased, though they had never offended. And by the same Reason, he might have annihilated them, being no more obliged to continue the Existence of a Nobler than an Inferior Creature. And though there is a difference betwixt God's resuming *Adam's* and an Inferior Creatures Being; but if any, this must concern some other of his Attributes, not his Justice, that allowing him to resume what he had lent, or to lay Afflictions less than that Good could countervail. But not to prosecute this, we shall take Notice of the Result of this and the foregoing Considerations, which is, that Truths divinely revealed, may seem repugnant to the Dictates of Reason, when they are not. Nor does Christianity oblige us to question those Rules, when duly applyed to what they were designed for, but when unduly applyed to God, and his Nature, or his absolute Power

Power and Will, so that we reject not but only limit those Rules, and may safely admit them; when restrained to their due Bounds.

The want of limiting several Axioms delivered in General Terms, hath made many Learned Men Subject to Errors, and say, some things are true in Philosophy, and false in Divinity, and the contrary. As that a Virgin should have a Child, and continue so, is thought an Article, which Divinity asserts to be true, and Philosophy denies. But this mistake might have been prevented, by Wording the Proposition more cautiously and fully; for though Physically a Virgin cannot bring forth a Child, which is to say, according to the Course of Nature; but indefinitely speaking, without confining the Effect to Physical Agents only, Philosophy cannot deny a Virgin to be a Mother; the Author of Nature not being confined to the ways of Working of Finite Agents; for he may, out of the Substance of a Woman, form a Man, without the help of a Man, as well as in the beginning, he formed a Woman out of the Substance of a Man, without the help of a Woman. Thus, that Iron being heavier than Water, will sink in it, if not upheld by another Body, is true in Natural Philosophy; but as Physicks lead Men to the acknowledgment of a God, if he interposes his Power, he may make it swim, either by withholding his Concourse from the Agents, whatever is the Cause of Gravity, or by some other unknown ways, as a Load-stone may suspend a piece of Iron in the Air without touching it, though the Air contributes less to the sustaining of it than Water would.

Cartesius, who ascribes so great a Power to Matter & Motion, was far from thinking, that what was impossible to them was impossible to God, that th^t urged by an Argument which likely to be a strong Temptation, to limit God's Omnipotence; yet he ingeniously confesses in a private Letter. For my Part, I think we ought not to say of any thing, that it is impossible to God. For all that is true and good being dependent on his Almightyness, I dare not so much as say, that God cannot make a Mountain without a Valley, or cannot make it true, that one and two shall not make three; but I say only, that he hath given me a Soul of such a Nature, that I cannot conceive a Mountain without a Valley, nor that the aggregate of one and of two shall not make three, &c. and I say only, that such things imply a Contradiction in my Conception. And agreeable to this in his Principles of Philosophy, he gives the following Caution. *Quod ut satis tuto, & sine errandi periculo aggrediamur, ea nobis Cautela est utendum, ut semper quam maxime recordemur & Deum Autorem rerum esse l. finitum, & nos omnino finitos.*

The Fourth
Consideration.

But to proceed to the Fourth Consideration. In the next place, I think we ought to distinguish between Reason considered in it self, and Reason considered in the Exercise of it, by this or that Philosopher, or by this or that Man, or by this or that Company, or Society of Men, whether all of one Self or of more, or to speak more in abstract, I distinguish betwixt Reason in abstracto, and in concreto. For whatever the faculty of Reason is in it self, the Ratiocinations are made by Men, either singly or concurring in the same Ratiocinations and Opinions; and therefore if the Reason-

Reasoning Faculty is not made the best use of, it does not follow, that what thwarts their Reasonings, must thwart the Dictates of right Reason; for Man having a Will and Affections as well as an Intellect, though our Judgments and Tenents should be made with an unbiassed Understanding; yet Intellectual Weakness, Prejudices or Prepossessions, by Custom, Education, &c. or Interest, Passions, Vices, &c. so much Influence them, that we make few Conclusions, or espouse few Opinions, which are the true Results of Reason, without some Personal Disability, Prejudice or Fault.

But to consider the extent of this Distinction, not only whole Sects, both in Religion and Philosophy, are Subject to Prepossessions, Envy, Ambition, Interest, and other Misguides, as well as single Persons, nay further, the whole Body of Mankind may be tainted with prejudices and errors, even from their Childhood, and some from their Birth, which continue undiscerned, and consequently unreformed.

And *Cartesius* begins his Principles of Philosophy to this Purpose; for, says he, because we were born Children, we often make wrong Judgments of things, which we are apt to retain all our Lives; which radicated Prejudices, so often mislead our Judgments, that he says, he found no other way to secure himself from their Influence but once in his Life time to doubt of all that he had till then believed. And the *Illustrious Verulam*, having told us; that the Mind of Man is besieged with four differing kinds of Idols; or Phantoms, some of which are got by Conversation and Discourse one with another;

others proceed from the Hypothesis or Theorems and Opinions of Philosophers, and perverse ways of Demonstration. Others are Personal to this or that Man, proceeding from his Education, Temperament, Studies, &c. and others he calls *Idolatribus*, being founded in human Nature or the Tribe of Mankind, of which he discourses of seven or eight: As that Man's Intellect hath an innate propensity to suppose greater order, and equality in things that it finds, and being unable to acquiesce, it always tends further and further, besides Mankind hath several other innate Prejudices, which he judiciously endeavours to remove.

Now if innate unheeded prejudices and propensities to Errors are apt to sway all Mankind, about things which are neither Divine nor Moral, nor Political, but Physical, where attainments are pleasant and not attended with distasteful consequences, not only a particular Philosopher or Sect, but the Generality of Men may be suspected of secret propensities to err about Divine things, and be indisposed to admit Truths, which both lay open the weakness of Nature and our Personal Disabilities; so as to mortify our Pride and Ambition, and afford the Mind so Pure and Chaste a Light as to discover our Vices and Faults, and often cross our Designs and Interest.

So that several of those Idols my Lord Bacon takes notice of, which pervert Men's Judgments in respect of things Natural, may have the same Effect in respect of Supernatural Things. Thus if somethings have once pleased the Understanding, we are apt to incline all other things to

suffrage

suffrage with them, though Inducements to the contrary are more Numerous or Considerable. He further observes, that Man is apt to esteem his Senses, and other Perceptions, as the Measures of Things, and that the Understanding is not sincerely disposed to receive Truth, but rather an Infusion of adventitious Colours from the Will and Affection; so that he is more inclined to believe what he would have true and to reject others upon grounds which do not infer their falsity. Now if these things are applied to divine Truths, and we consider, that in Youth we are wont to converse with Corporal things, and that our Affections which have them for their Objects sway us, Men may well be prone to frame such Notions of Divine as they of other things of a different and meaner Nature; or reject them, because not analogous to such things as were usually the Measures of Truth and Falsity. And if we consider Man's imbred Pride, which inclined even *Adam* in Paradise, to affect being like God, knowing Good and Evil, no wonder Men make their present Notions, their Senses, Inclinations, and Interest, the Standard of Estimating other things, whether Natural or Revealed. And as *Heraclitus* complained, that every Man sought the Knowledge of Natural Things in himself, and not in the World; so we may, that Men seek all the Knowledge they may or will admit, either from themselves or the Universe, instead of the Omniscient Author of them both. And if further, in Physical things, where one would think Rational Beings should seek Truth, with no other design than to find and enjoy it, our understandings

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standings are so byassed by our Wills and Affections, no wonder, if we allow the fall of our first Parents, that our Passions and Interest, and frequently our Vices should mislead our Intellects about those revealed Truths, several of which are above our comprehensions, and more contrary to our inclinations.

*The Fifth
Consideration.*

And I think, *There may be a great Difference betwixt things contrary to right Reason, or so much as to any true Philosophy, and their being contrary to the received Opinions of Philosophers, or to the Principles or Conclusions of, of this or that Sect of them.* And here I may apply what *Clemens Alexandrinus* said on another occasion, that Philosophy was neither *Peripaterical*, *Stoical* nor *Epicurean*, but whatever amongst all of them was fit to be approved.

And indeed, if we examin the Opinions of several Sects of Philosophers, in those Points, where they hold things repugnant to Theological Truths, many are so ill grounded and disagreeable amongst themselves, that an Inquisitive Examiner would have little Reason to admit them, as a Philosopher only, though he had none to reject them as a Christian. As for the *Peripetericks*, who have chiefly Questioned Christianity for some time, their Doctrins are in a great Measure exploded, and scarce any of the Modern Philosophers, who allow themselves the free use of their Reason, believe, that an Element of Fire is lodged under the supposed Sphere of the Moon, or that Heaven consists of Solid Orbs, that Celestial Bodies are ingenerable & incorruptible, that the Heart is the Origin of the Nerves, and the Torrid Zone uninhabitable.

ble, and a great many other Doctrins, which a Corpuscularian thinks not worth confuting.

And as for the *Epicureans* and the *Somatici*, tho' they are more formidable Enemies to Christianity, yet none of them entertain any Opinion inconsistent with it, which is not as repugnant to Reason, or at least cannot be demonstrated by it. And as for the *Cartesians*, who lay aside all Supernatural Revelations in their Enquiries into Natural things, they both think and very plausibly prove, the two first of *Epicurus's* three Principles: That the Bodies, he calls Atoms are indivisible, and that there is a *Vacuum*, to be as repugnant to Reason as the *Epicureans* think the Notion of an Incorporeal Substance, the Creation of the World, or the Immortality of the Soul. And as for the *Somatici*, what Mr. *Hobbs* hath said, hath not perswaded me from the Truth of any thing I believed before, even in Natural Philosophy, having neither discovered new Truths nor old Errors, having upon some occasions but ill proved his own Opinions, and but weakly opposed his Adversaries.

But to examin the Fundamental Maxim of all his Philicks, *viz. That nothing is removed, but by a Body contiguous & moved*, for if this be true, it may be asked, how there comes to be Local Motion in the World; for either all the Parts of Matter, that compose the Universe, have Motion belonging to their Nature, or some Parts of Matter have this Motive Power, and some have not, or else all of them are without Motion. If Motion belongs to Matter, to allow, that destroys his Hypothesis, if some Parts of Matter have Motion

Naturally and others not, then the Assertion cannot be Universally true; for though it may hold in the quiescent Parts it cannot in the others, since it appears not, why a Body, to which Motion is Natural, may not move without a Motion given by another contiguous Body moved. And if Motion Naturally belongs to no Body, but each wants another to move it, we may ask, how any thing comes to be moved locally, which is evident; for if no Part of Matter hath any Motion, but what it receives from the Impulse of another contiguous, and there is nothing but Matter in the World, how should Bodies come by Motion, since they have it not by their own Nature, nor can receive it from External Agents. If Mr. *Hobbs* says, that Motion was impressed on some Parts of Matter by God, we allow that, but that will not answer his end, speaking agreeably to his own Hypothesis. For we may ask, whether the Supreme Being, the Assertion refers to, be a Corporeal or an Incorporeal Substance.

If it be Incorporeal, and yet the Efficient Cause of Motion in Bodies, then it cannot be universally true, that all Bodies moved are so by a Body contiguous in Motion. For according to our supposition, the Bodies that God moves, either himself, or by the intervention of an Immaterial Being, are not moved by a Contiguous Body, but an Incorporeal Spirit. But since Mr. *Hobbs* is thought to believe the Notion of an Immaterial Substance absurd, and to imply a Contradiction, and since, if God be not an Immaterial Substance, he must consequently be Material and Corporeal, there be-

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ing no third Substance, if Mr. *Hobb's* Deity be Corporeal, the same Difficulties will occur, that were before mentioned; for calling this Body, will not alter it from a true Body, and consequently a Portion of this Divine Matter must be contiguous and moved, before it can move a part of the Mundane Matter, which it cannot be without another Portion of Divine Matter, qualified to impress a Motion, nor can this but by another.

Besides, it will make Confusion in giving the Physical Causes of things, if we distinguish accurately betwixt Mundane Bodies and Divine, nor does it appear, how this Corporeal Body will make good the Hypothesis; for it may be asked, how this Divine Matter comes by this Local Motion? if it hath it from it's own Nature, since the *Epicureans* assert the same of their Atoms, how Mr. *Hobb's* Opinion will appear, since the Mundane Matter is as likely to have congenit Motion, as that what is Corporeal can be God, and capable of giving it Motion, to do which it's Subsistence must be divided into as many Parts, as there are Corpuscles in the World, which move separate from those near them. Besides, according to the supposition these Divine Bodies are true Bodies, yet are not moved by Bodies contiguous and moved, but by an innate Motion, flowing from their Essence or Nature, since no such Body is pretended to exist, that is not to be refered to either Mundane or Divine Matter. To conclude, since Local Motion must be in one or both of these two Matters, it must be Natural to one of them, according to Mr. *Hobbs*, for though he granted

ed an Immaterial Being, it could not produce Motion in any Body, since he says, no Body can be moved, except by another contiguous and moved.

And though this Position might be granted, as cautiously proposed by *Cartesius*, who attributed the first impulse of Motion to God, and that he preserved it, yet as it is proposed by Mr. *Hobb's* Followers, there appears no competent Reason to admit it.

As to that saying of Divines as well as Philosophers, That such or such an Opinion is true in Divinity, but false in Philosophy; or on the contrary, Philosophically true, or Theologically false. To determin how well grounded these Expressions are, we shall consider, that Philosophy may signify two things very different. For *first*, it is used to signify a System of the Doctrins of a particular Sect of Philosophers. But in a more general Acceptation of the Term, it may comprehend all those Truths or Doctrins, which Man's Natural Reason, free from Prejudices and Partiality, and assisted by Learning, Attention, Exercise, Experiments, &c. may evidently make out, or by necessary Consequences infer from clear and certain Principles.

This being premised, we are further to observe, that many Opinions are maintained by several Sects of Christians, or by the Schools of more than one or two Sects, which either belong not to the Christian Religion, or ought not to be esteemed Parts of it, unless the Philosophical Principles and Ratiocinations, on which they are supposed to be founded, and not express

press or bare Revelation agree with right Reason.

So that if Philosophy be taken in the first Sence, it's teaching things repugnant to Theology, in a large and vulgar Sence, will not conclude any thing to purpose against the Christian Religion. But if Philosophy be taken in the later and true Sence, and Divinity only for a System of those Articles, clearly revealed in the Scriptures, nothing is false in Philosophy so understood, that is true in Divinity thus explained; for it is not likely, that God being the Author of Reason, as well as Revelation, should oblige Men to believe as true, what Reason may reject as false.

Yet if by saying, such a thing is true in Divinity, but false in Philosophy, we should mean; that if the Doctrin was proposed to a meer Philosopher, to be judged of, according to the Principles of his Sect, or according to what he, not having heard of the Christian Religion, or it not being duly proposed, would reject it, the way of speaking ought to be allowed; but then it is to be supposed, that he would reject the Articles of Faith, not because they could not be proved, but as being founded on Revelation, which he may not have heard of, or hath not had it fairly proposed; so that he must as a Rational Man, reject them as Proofless. And as the same Philosopher will be cautious, of admitting any thing that is not proved, if it be Philosophical, yet he will be cautious how he rejects things as false and impossible, in Matters which seem to be beyond the reach of Natural Reason, especially if Lear-

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ned Men pretend to know something of them by Divine Revelation, which though he will not easily believe true, yet he will allow, if it be proved true, to be a proper Medium to evince Truths, which he could not discover by meer Natural Reason. Indeed such a Philosopher would reject the Articles of Faith, were they only to be judged of by the Dictates of Natural Philosophy; yet he would only pronounce them false, supposing the Arguments which alledge the Testimony of Divine Revelation, are not sufficient in their kind; for, as he would not easily believe any thing in Nature, disagreeable to the established Laws of Nature; so he would not easily pronounce his Judgment of any thing beyond the Sphere of Nature. He will indeed expect as much Proof of the Divine Testimony, as the Nature of the thing will require or allow, yet he will not be unwilling to acknowledg, that God who is the Author of that Testimony, can do and know more than we can explain how he can discover, or conceive, how any Physical Agent can perform.

To countenance, what we have been offering, we shall add, the Suffrage of a Philosopher mentioned in *Cartesius*, who is accused of excluding Theology out of his Philosophy, what he says, being to our present purpose, his Words are, *Si forte Nobis Deus de seipso, vel aliis, aliquid revelet, quod Naturales Ingenii nostri vires excedat, quælia sunt Mystèria Incarnationis & Trinitatis, non recusabimus illa credere, quamvis non clare Intelligamus, nec alio modo mirabimur; multa esse tum in immensa ejus Natura,*

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tum etiam in rebus ab illo creatis, quæ captum nostrum excedant.

And tho' the main Scruples said to be suggested by Philosophy, against some mysterious Articles of Religion, arise chiefly, because the Modus of those things is not easily conceived, or hard to be explained, the confidence they are asserted with, is the chief Force of these Objections; for several things are maintained by the School Divines, not contained in the Scriptures, which may be applyed to what we are considering, the Scripture only asserting the *Thing*, to which the Schools add the *Modus*. And as the School Divines determin many things without Book; so the Objections against what the Scripture delivers, are grounded upon the Errors of the School Philosophers, who style their Conceits Metaphysical Truths.

But to proceed, to the Consideration chiefly intended, *viz. That the Modus of a revealed Truth, is either very hard, or not at all explicable.* But it will therefore follow, that the thing is irrational, if it's Proofs are sufficient in their kind; for in Philosophy several things are admitted, whose Modus cannot be explained, or perhaps conceived; for an Instance of which, we may urge the Union of the Soul and Body in Man, none being able to explain Physically; how an Immaterial Substance can guide and determin and excite the Motion of the Body, yet cannot produce Motion in it, or how an Incorporeal Substance should receive from a Body, the Impressions of Pain and Pleasure, and other Properties of this Union; nor can we conceive how the intimate Union is made betwixt

twixt a Spirit and a Body; so that the former cannot at pleasure quit the later. And it is as difficult to explain physically, how these different Beings came to be united, as how they are kept from parting. And if to avoid explicating the Modus of this Union betwixt the Soul and Body, it be said, that the former is but a Con-texture of the finer and more subtle Parts of the later, the Abstruseness of the Union will be shifted off, but the Doctrin will not much relieve us; for those that assert the Soul to be Corporeal, have a Modus to explain that is inexplicable. It appears not, how meer Matter can form Syllogysms, have Conceptions of Universals, and invent speculative Sciences and Demonstrations, and be capable of those things which are peculiar to Man alone.

Upon what hath been said in this and the first Section, we shall make this Reflection, viz. That if we lay aside all the irrational Opinions, that are unreasonably fathered on the Christian Religion, and all erroneous Conceits repugnant to Christianity, which have been groundlessly fathered upon Philosophy, the seeming Contradictions betwixt Divinity and true Philosophy, will be but few, and the real ones none at all.

*The Sixth
Consideration.*

The sixth Consideration is, *That a thing may, if singly or precisely considered, appear unreasonable, which yet may be very credible, if considered as a part of, or a manifest consequence from a Doctrin that is highly so.* When Astronomers tell us, that the Sun, which to sight appears so small, is above a hundred and threescore times bigger than the Globe of the Earth, which is forty times bigger than the Moon, it at first seems incredible. But since Astronomers,

Astronomers, by finding the Diameter of the Earth, and observing the Paralaxes of Planets, have determined the Proportions of these three Bodies, Learned Men admit what they affirm.

So the Relations of Earthquakes, extending hundreds of Miles, Eruptions of Fire, that have burnt up large scopes of Land, the blowing up of new Mountains by their own Fires, the casting up of Islands in the Sea, and other unquestionable Prodigies, if attested but by ordinary Witnesses, would be thought incredible, but the Circumstances of the Relations gain our Assent.

If you consider, what Geometricians teach upon the sixteenth Proposition of the third Book of *Euclid* (containing a Theorem about the Tangent and the Circumference of a Circle) it will appear, that Geometricians have proposed greater Paradoxes than Philosophers or Divines. And though several of those things have been questioned, yet what is allowed, contains things so strange, that Philosophers not well acquainted with that Proposition, and it's Corollaries, will think them incomprehensible or incredible, yet they are demonstrable and legitimately deducible from an acknowledged Truth.

And even several *Magnetical Phenomena*, nakedly proposed, seem incredible, yet those acquainted with *Magnetical Philosophy*, without particular Tryals, believe them, being consonant to the Doctrine of Magnetism ; and though an Ordinary Philosopher would, a *Magnetical Philosopher* would not think it unreasonable, that one part of a Load-stone should draw a Needle

Needle to it, and the other drive it from it, and that a Needle in a Sea Compass, after it hath been carryed several hundred Leagues without varying, it's declination should suddenly point at a part of the Horizon, several Degrees different from what it did before; to which we might add, several other Instances about Magnetical Bodies.

Therefore when any thing is objected against in Scripture, as incredible, we are not only to consider, whether if it were not delivered in that Book, we should think it worthy to be believed or rejected; but whether it is so improbable, that all the Proofs brought for the Authority of the Scriptures, are rather to be rejected, rather than this recommended by that Authority ought to be believed; I say, when it is manifestly recommended by that Authority, because it not clearly delivered in Scripture, or is not fairly deduced thence, so far as it wants of that clearness, we may deny our Assent.

To countenance what I have said, I shall add the Testimony of *Socinus*, who was accounted a strict Examiner of whatever he admitted, who in his Confession in his Second Epistle to *Andreas Duditus*, says, *Jam vero ut rem in pauca conferam, quod ad meas aliorumve Opiniones, quæ notitatis præ se ferunt speciem, attinet, mihi ita videtur; si detur, Scripturam sacram ejus esse Authoritatis, ut nullo modo ei contradici possit, ac de interpretatione illius, omnis duntaxat sit scrupulus, nihil, ut ut verisimile aut ratione conclusum videatur, afferri contra eas possit; quod ullarum sit virium, quotiescunq; ille sententiis at verbis illius Libri aut Rationibus liquido inde deductis probata atq; asserta fuerint.*

ſuerint. Another Testimony we shall produce out of *Cartesius's* Principles of Philosophy, where discoursing of the Infinite or Indefinite Division of the Parts of Matter, requisite to make them fill all differently figured spaces, through which various Motions makes them pass, he confesses the point very abstruse, yet concludes, *Et quamvis quomodo fiat indefinita ista Divisio, cogitatione comprehendere nequeamus, non ideo tamen debemus dubitare quin fiat, quia clare percepimus illam necessario sequi ex Natura Materiae, nobis evidentissime cognita, &c.*

And here we shall take Notice of three or four Particulars, which may be deduced as Carollaries from the foregoing Discourse, and which will be confirmed by the Proofs annexed to them. The first is, that we must not presently conclude a thing contrary to Reason, because Learned Men cannot clearly comprehend it, if there be competent proof of it's Truth, and the thing is Primary or Heteroclite.

And it is not always necessary to render the belief of a thing Rational, that we should have as clear a comprehension of it as in ordinary Cases; since the Truth of a thing may be suggested by Arguments drawn from the Nature of it, already understood by us, and also by the Testimony of such a Witness as will not deceive us, and cannot be thought to be deceived himself. And therefore in some Cases a thing may be reasonably believed, since we have sufficient Reason to believe it true, either by the Evidence and Cogency of the extrinſick Motives, we have to believe, or the Proofs suggested, by what we know of the thing believed, though some
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thing in the Nature of the thing puzzles our understanding.

That many things require Attention and good Judgment to prove them, and yet may be true, will appear from some Geometrical Demonstrations, which require a good Stock of Knowledge in those Matters, and a great deal of Patience to carry such proofs in ones Mind thoroughly. There are other things, though manifestly existent, are of so abstruse a kind, that it is difficult to form clear and satisfactory Notions of their Nature, which appears in some of the most obvious things, as *Matter* and *Time*. As to the first, though the World and our Bodies are made of it; yet the Ideas we can form of it are attended with two great difficulties to be easily acquiesced in. As to *Time*, though what *Augustine* says, *si nemo ex me querat quid sit Tempus, scio; si quarenti explicare velim, nescio*, seems to intimate a Knowledge of what it is, in the first part, yet the second shews, he had no Intelligible Idea of it; so that the first shews, that when he did not attentively consider the Nature of it, he thought he understood it, knowing there was such a thing, though he could not explain what it was.

And indeed though time is allowed by all to be, yet if we had no other Notions of Time and Eternity, than what might be collected from the Descriptions of it's Nature and Properties, we should look upon it as an Unintelligible thing, and attended with so many Difficulties, that a Wise Man could scarce admit the Belief of it, which will easily be granted by one that hath read those confounded Discourses and Speculations

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tions about Time and Eternity, to be met with amongst the School Men : And no wonder since *Gassendus* hath shewn, that Duration is neither a Substance nor an Accident, which is also said of *Space*, that the Disputes about Time should be as difficult.

These Instances seem to agree very well with what we intimated by the Expression *Primary* or *Heteroclite*; to which may be refered some of those things called Spiritual or Supernatural, about which the same Considerations may have place. And I am induced to suppose, that there ought to be in some Cases, a great difference betwixt them and other things, and consequently, betwixt the Judgment we make of the ways of arguing about them, and other things; so that they are very difficult to be explained by our imperfect faculties, and consequently are less satisfactory and acquiesced in, than things, though no more True or Rational, suggested upon Enquiries concerning Subjects more familiar, or more proportionate to our Faculties. For these abstruse things having no proper and clear *Genus*, by which they may be comprehended, or have nothing like them, by whose resemblance they may be conceived, or being both *Primary*, and *Heteroclite* too, as not being derived from the common Physical Causes of other things; and being very different in Nature, it is no wonder our Limited Understandings cannot comprehend them.

Upon such Considerations as these, it may not be unreasonable to think, that things Primary and Heteroclite, and by parity of Reason, Immaterial and Supernatural, are sufficiently proved in their kind, if the proof were competent and satisfactory, supposing no Considerable Objections made against the thing proved. And I know not, why in Judging of Primary and Immaterial things, we should not prefer that Opinion which hath the most positive proofs, though perhaps liable to the greater Inconveniences, since in such Cases, our Understanding is gratified with the most positive Inducements to assert; and it is not confounded by Objections, because they cannot be directly and fully answered, by reason of their abstruse Nature, and the narrowness and weakness of our Human Intellects.

And for this Reason, in such uncommon Matters, we sometimes acquiesce in Proofs, notwithstanding such Objections as in ordinary Cases might prevail; for the things these proofs relate to, being Primary or Heteroclite, or equally abstruse, whatever Opinion we chuse, must be incumbred with Difficulties, and will be liable to Objections which may never be answered directly and satisfactorily. And where Opinions are Contradictory, we may conclude, that those Difficulties will not Effectually evince the falsity of a Theological Opinion, since as great may be objected against another, either a manifestly or confessedly Truth, or which must needs be admitted to be one.

A Second Corollary drawn from the Discourse may be, that it may not be unreasonable to believe a thing, though it's proof be very difficult to be understood, which may appear from several Geometrical and Mathematical Demonstrations, some of which are deduced from intermediate Conclusions, from Principles so very remote, and require such a long Series of Mediums, that a Man must have a great deal of Patience, that reaches to the end of a Demonstration, and diligent Perusers find themselves often unable to carry along such a Chain of Inferences in their Mind, as to discern whether the whole Ratiocination be coherent, & all the particulars have their due Strength and Connection; some of the Demonstrations of *Vicellio*, and even of *Clavius*, being sufficient to tire your Patience and Attention. And though the Modern Algebraists by their expressing Quantities by Symbols, have so abridged Geometrical and Arithmetical Demonstrations, that by the help of *Species* it is sometimes easie to Demonstrate, that in a Line, which in the ordinary way would require a whole Page; yet some Demonstrable Truths are so abstruse, that in the Symbolical way Men want more Attention to discern them, than some Men would employ in any Contemplation whatever. And *Cartesius* confesses, that the Solution of Problem in *Papyrus*, cost him no less than six Weeks Study, though now, most Mathematical Demonstrations seem much shorter than they are, *Euclid's Elements* being so many *Lemmata* already known and demonstrated. From whence it appears, that though some Theological Truths are so Mysterious and Abstruse, that the force

ot their Proofs cannot easily be discerned, though proposed by *Des Cartes* and others, yet if other Competent Judges, accustomed to Patience and Attention in discerning difficult and important Truths, are satisfied with them, the Proofs may be Powerful, though their force is not easily apprehended; for if Difficulty is sufficient to prove the invalidity of a Ratiocination, none may more fitly be rejected than Mathematical Demonstrations.

A Third Corollary deducible from the foregoing Discourse is, that it is not always against Reason to embrace an Opinion attended with Difficulty, or subject to an Objection not easily answered. Especially, when the Nature of the Subject is such, that other Opinions about it are Subject to the same Inconveniences, or as great. The first Part of this Consideration is a consequence of a Supposition in the preceding Discourse; for whatever renders a Doctrine or an Assertion difficult to be explained, will easily supply it's Adversaries with Objections. And as for the later part of the Consideration it will want but little proof; for if the Subject or Object of the Opinion be such, that the Contradictory Opinion and others, are Subject to the same Inconveniences, or equal or greater; the Difficulties offered against a Theological Doctrine, may reasonably be attributed, not to the unreasonableness of the Opinion, but something else.

The Last Confectary deducible from the preceding Discourse is, that it is not always unreasonable to believe something Theological for a Truth, which, though not truly inconsistent with;

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yet we do not clearly discern to comport very well with something else, that we also take for a Truth; or perhaps that is one; if the Theological Tenet have sufficient Proof in it's kind, and of such sort of things as we discourse of.

It is the Belief of the Generality of Philosophers as well as Divines, that God fore knows all future Contingences, yet how Prescience and the free Will of Man are consistent, is so difficult to discern, that the Socinians are wont to deny such things, as depend on the Will of free Agents, to be the proper Object of Omniscience. And the Head of the Remonstrants, though a Subtle Writer, acknowledges, that he knew not how to make out the Consistency of God's Prescience, and Man's Freedom, yet acknowledges them both to be Truths; being obliged to acknowledge the former, as a Consequence of the Infiniteness of God's Perfections, as well as by prophetick Predictions. And the Reconcilableness of these Truths is not a difficulty peculiar to the Christian Religion, but concerns speculative Men in all Religions, who acknowledg a Deity infinitely perfect, and allow Man to be a free Agent; I shall conclude this Section with *Cartesius's* Address to a Philosophical Adversary. As I have often said, when the Question is about things that relate to God, or to what is Infinite, we must not consider what we can comprehend of them (since we know that they ought not to be comprehended by us) but only what we can conceive of them, or can attain to, by any certain Reason or Argument.

But to proceed to one of the main Considerations, which is, *that when we are to Judge, whether a thing be contrary to Reason or not, there is a great deal of difference, whether we take Reason for the faculty furnished only with it's own innate Principle, and such Notions as are generally obvious, or for the faculty illuminated, by Divine Revelation, especially that which is contained in the Books commonly called the Scriptures.*

*The Seventh
Consideration.*

To make this more evident, we may observe the two following particulars, *First*, that in Natural things, it is not thought irrational to believe several things upon extrinsical Proofs, especially the Testimony of the skillful; as a Man, if it were not for that Testimony, though of Natural Parts and Learned in Philosophy, would think unreasonable to believe and contrary to the Laws of Nature. Of which the *Phænomena* of a Loadstone furnishes us with some Instances; for though with one part it will draw; yet with another, the same Stone will repel the same point of the excited Needle, and yet will attract either point of another Needle, which was never near a Loadstone before. And though the Loadstone imparts an Attractive Virtue to Iron; yet when it is capped, and a piece of Iron is interposed betwixt the Loadstone and the weight to be raised, it will take up a great deal more than if it be immediately applyed to it, it self; so that *Mersennus* says, he had a Loadstone, that of it's self would take up but half an Ounce of Iron, which armed would lift up ten Pounds, which was three hundred and twenty times more than the former weight. And that a Mariners Needle once touched with a vigorous Load-

Loadstone, will afterwards point North and South, when freely poised, and if it be turned any other way, as soon as left to Liberty, it returns to it's former Position. And a Loadstone floating on Water, will as well come to, and follow a piece of Iron that is held from moving towards it, as when it self is fixed, and the Iron at Liberty, it will draw that Iron to it. And without any sensible Alteration in the Agent or the Patient, the Loadstone will instantly communicate all it's Virtue to a piece of Steel, and give that a Power to communicate the same Virtues to other pieces of Steel. And further, If a Loadstone marked at the End, be cut Lengthways, according to it's *Axis*, and one segment be suspended freely over the other, the halves of the Marked end, which were contiguous before, will not now lye together; but the lower will drive away the other, and which respected the North in the Marked end of the Intire Loadstone, will joyn with that extreme of the lower half, which in the intire Stone regarded the South. And further, there are the same Magnetical Qualities in the separated Parts of a Magnet as in the intire Stone, and if it be cut, or broke into a great many pieces, every one of those pieces, though never so small, will have it's own Northern and Southern Poles, and become a little Magnet. And if a Loadstone be made Spherical, this little Magnetick Globe, being freely placed, will not only turn North and South, and keep that Position, but have it's Poles, Meridians, *Æquator*, &c. upon good Grounds designable upon it, as upon the

the Globe of the Earth, and this will hold, whether it be great or small.

From hence we may gather and suppose, that a Man that never was acquainted with Magnetical Experiments, would think these contrary to the Principles of Nature, and consequently to the Dictates of Reason, and reject them as incredible. And I question not, but that I could form as plausible Arguments from the Axioms of Philosophers, and the Doctrine of the Schools, against some Magnetical *Phænomena*, as the same Topicks afford against the Mystrious Articles of Faith; since amongst the strange Properties of a Loadstone, there are some, which are stupendious and seem repugnant to the Dictates of Philosophy, and the Course of Nature; for, whereas Natural Bodies, though never so subtle, require particular Dispositions in the Medium, their Corpuscles are diffused through, or their Actions transmitted, so that Light, whether a subtle Body, or a bare Quality, is resisted by all Opacous Mediums, and the Effluvia of Amber and other Electrical Bodies, will neither penetrate the finest Glass, nor a Sheet of Paper, yet the Loadstone hath it's Effects through all kind of Mediums.

If the Poles of two Magnetical Needles, both respect the North, some Philosophers would ascribe it to Sympathy: yet if we bring the Extremes of the same Denomination, within the reach of one another, they will drive each other away, as if they had a powerful Antipathy.

If a long Needle be placed horizontally, and poised upon the point of a Pin, when you touch one end with the Pole of a vigorous Loadstone, it

it will evidently dip or stoop, though it be frequently taken off the Pin, and put on again ; which inclination of the Needle will continue many Years, though no other Change is made in the Metal by the contact of the Loadstone, but that one end hath acquired a lasting preponderancy without the other growing lighter, yet the whole Needle is not heavier than before. And the inclination of the Magnetick Needle, may be again taken away by another Touch of the Loadstone, without diminishing the weight of the part deprived of it.

And the Effect, the Loadstone hath upon the Mariners Needle, tho' it makes no sensible alteration in it, continues, tho' carryed as far as the Southern Hemisphere, nor does the Magnet lose any of it's Virtue, by communicating it to the Needle. Yet the Needle will not every where duly respect the North, it in some places declining some degrees East or West. Nor will it in the same place always respect the same point of the Compass, but at several times may vary from the true Meridian, sometimes to the East and sometimes to the West.

And further, all the Vertues of a Magnet may be communicated to Iron, without an actual Contact, by holding the Iron conveniently near it for a little time : And the Metal may as soon be deprived of those Qualities, without an immediate Contact, by the same or another Loadstone. And if you mark one end of a Rod or a long piece of Iron, that was never near a Magnet, and hold it perpendicularly, you may presently make it become the North or South Pole of a Magnetical Body ; for if in a perpen-

perpendicular Position, you apply the North end of an excited Needle to the bottom of it, the lower end of the Iron will drive away that Extreme, which will be attracted by the upper end. And if you invert it, and make the lower end the upper, it will not attract, but repel the same North Point of the Needle, under which it is to be held perpendicularly.

Vis unita fortior, is a received Rule amongst Naturalists, yet frequently if a Magnet be cut in two, these will take up more Iron than the intire Stone. And if of two Loadstones, one be much longer, and for that reason stronger than the other, it will draw a greater piece of Iron, and retain it more strongly, yet when it sticks fast to the greater, the lesser may draw it from it.

These *Phænomena* are so repugnant to the Opinions of Naturalists, and the ordinary Course of Nature; that if, without the Testimony of Experience they had been proposed to *Aristotle*, he would have esteemed them fictitious, as repugnant to the Law of Nature; yet though these Effects are so strange, and that they should continue at some Thousands of Leagues distance, yet being attested by Navigators, the *Aristotelians* believe it.

Thus though the Habitableness of the Torrid Zone was denied by *Aristotle*, and others, upon probable Grounds for many Ages, yet the contrary is now believed by *Peripetetics*, that were never there. And though *Ptolemy* and others formed a plausible Theory of the Planets, which was acquiesced in for 14 Ages; yet Modern Astronomers,

Astronomers, who have searched into these things, and believe their Eyes, and make use of their Reason, have altered that Theory as to the Number and Order of the Planets. And all these last Innovations are grounded upon *Phænomena* discovered only by two or three pieces of Glass placed in a long hollow Cane, and called a Telescope.

But to proceed to the Last, and two main Considerations, which is, that when we are to Judge, which of two disagreeing Opinions is most Rational, *i.e.* to be Judged of most agreeable to right Reason, we ought to give Sentence, not for that which is the faculty, furnished only with such and such Notions, whether vulgar or borrowed from what this or that Sect of Philosophers would prefer, but that which is preferred by the Faculty, furnished either with all the Evidence requisite or advantageous to make it give right Judgment in the Case lying before it, or when that cannot be had, with the best and fullest Information it can procure.

This is so evident, that it would be needless to go about to prove it, and therefore, I shall only observe, that provided the Information be credible, and which he clearly understands, it matters not, whether we have it by Reason, as it is taken for the faculty furnished only with it's innate Notions, and common Observations, or some Philosophical Theory, or Experiments purposely contrived, or Testimonies Human or Divine, which we call Revelation; these being but different ways of informing the understanding; & if these Informations have the lately mentioned Conditions, let the Understanding
receive

receive them which way it will, it may safely Reason and draw Inferences from them.

Astronomers have observed a Star amongst the fixed ones, which hath shewn it self for some Years, and disappeared, and then appeared again. And though Experimental Philosophy could not contribute to the Producing of it, nor is it taken Notice of in any System, yet it may be as true a Celestial Light as any, and we may be allowed to Philosophize upon it; and draw Conclusions from the Discoveries it affords us, as from any other, or those falling Stars within our own Sphere.

That the Supernatural Performances of *Witches* and *Evil Spirits*, if true, might furnish us with *Hypotheses* and *Mediums* to prove Theorys as well as *Natural Phenomena*, seems to be acknowledged by those Naturalists, that decline any other way to avoid the consequences, which may be inferred from such Relations, rather than to disprove those Relations, occasioned by the Credulity and Imposition of Men.

But to proceed to what is more unquestionable, since Philosophers admit the Attributes of Magnetick Bodies, which they never saw, only upon the Testimony of Writers, who knew not the Causes of them, but were only looked upon to be honest and faithful Relaters; I say, since such strict Naturalists believe such amazing things, upon Men's Authority, who knew not the Nature of Magnetick Bodies; And since these strange *Phenomena* are not only believed, but a great many Inferences drawn from them, without any Reflection upon them that assent to the Things and the Inferences, why should it

be

be unreasonable to believe the Testimony of God, either about his Nature, which he can best and most fully know, or about what he hath done, as the Creation of the World and of Man; or which he means to do, as the Destroying the World, and the Resurrection, and Rewards, and Punishments, according to Merit; for I think the Apostle says very well. *If we receive the Testimony of Men, the Testimony of God is greater.* 1 John v. 9. especially relating to his own Nature, Will and Purposes, since Reason by it's own Light, cannot give us the Knowledge of them. So that Christians assenting to Doctrins revealed, neither need, or do reject the Authority of Reason, only appeal from Reason more slightly, to it's Dictates more fully informed. Of which two nothing is more Reasonable than to prefer the later to the former.

And I am apt to think, that if what we have represented were fully considered, it might contribute to answer or prevent the Objections, which fix wrong Notions of the Articles of our Faith, in some Questioners of Religion, who are not resolutely vitious, as if those Articles were repugnant to Reason; for it is not to be looked upon as the Judgment of Reason, which is pronounced by Rational Men, according to a Sect of Notions, though the Inferences from them might be Rational, if nothing else was to be considered by him that judges. But that is rather to be esteemed the Judgment of Reason, which takes in the best Information, belonging to the things under Consideration. And therefore those, tho' otherwise Learned and Witty,

Witty, do not equally weigh the Case of those that believe the Articles we speak of, when they judg them to assent Irrationally, because the things they assent to, cannot be demonstrated by Natural Reason only, and might be rejected by *Aristotle*, *Epicurus* and *Democritus*, to whom they might be nakedly proposed. For though this Allegation might be of force, did we pretend to prove what we believe by Arguments drawn from the Nature of the thing assented to; it will be of no force, since we pretend to prove, what we believe, chiefly by Divine Testimony, and therefore should not be censured, for an irrational assent, except it be made appear, that Divine Testimony is not duly challenged for the main of our Religion, or that we Father some particular Articles on that Testimony which is not contained in it, or rightly infered from it. And to urge us to prove the Articles of Faith, delivered in the Scriptures, and which are not to be known without Revelation by Natural Arguments, without regard to the Proofs of that Revelation, on whose Account we believe the Articles, is to challenge a Man to a Duel, and oblige him not to make use of his best Weapons; as if a Man were obliged to prove the Torrid Zone habitable and not to make use of the Testimony of Navigators, who tells us of the Breezes that fan the Air, and other Circumstances, which furnish us with Arguments to confirm their Relations.

Indeed, the Limitations the Christian Religion gives to the Dictates of Philosophy, which were once admitted in a larger Sense; and the Doctrin about God and the Soul, &c. which it
adds,

adds, to what the Light of Nature might afford Men, may seem to some prejudicial to Philosophy, which it can be no otherwise, than as it adds something better; as a Gardiner grafting into a Crabb Tree a nobler branch, makes it bring forth better Fruit.

To what we have said, we shall add, that it often happens, that those things, which were first proposed to the Understanding, and believed upon the Authority of Revelation, are afterwards assented to, upon the Account of Reason only. And to this purpose I consider, that none of the Antient Philosophers, nor even those, that believed God to be the Author of the World, once thought, that he Created Matter out of nothing, but only formed the World of pre-existent Matter; whereas Christians are taught as an Article of Faith, that besides a Mediate Creation, as when Fishes were made out of the Water, or *Adams* Body out of the Earth, Matter it self was produced out of nothing.

After what hath been said, it may not be improper to consider what kind of Proof is sufficient to make the Christian Religion thought fit to be embraced; for besides the Demonstration usually treated of in Logick, Philosophers reckon three distinct kinds and degrees of Demonstration. *viz.* *Metaphysical*, where the Conclusion is built upon General Metaphysical Axioms; as, *Nihil potest simul esse & non esse; non entis nulla sunt Proprietates Reales, &c.* *Physical*, the Conclusions being deduced from Physical Principles, as, *ex nihilo nihil fit, Nulla Substantia in nihilum redigitur, &c.* which are not so absolutely

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lutely certain as the former ; because a God can Create and Annihilate Substances; yet these were held unquestionable by the Antient Naturalists. The Third, Demonstrations are *Moral*, the Conclusion being grounded on some cogent Proof in it's kind ; or concurrent Probabilities, so that it must be allowed, granting the most received Rules of Prudence, and Principles of practical Philosophy.

And though this last sort of Demonstration is short of the other, yet it is the truest guide, which Men's Actions, though not their Contemplations have regularly allowed them to follow. And Moral Demonstrations Men most aspire to, both in the Conduct of private Affairs, and in the Government of States, Monarchies and Empires. Such Demonstrations may be made of particulars, each of which are but probable ; of which not only God's, but Human Laws afford us Examples ; for though the Testimony of one Witness is not thought sufficient to prove a Man guilty of Murder, yet a second concurring with the former is thought sufficient, tho' of no more Authority than the former, for each single is but a probability ; yet the concurrence of Probabilities amounts to a Moral certainty, and the Judge proceeds accordingly, against the Person accused.

But to apply these to the Christian Religion, *Aristotle* says, it is as unskilful and improper to require Mathematical Demonstrations in Moral Affairs, as to acquiesce in Moral Arguments in Mathematicks, and therefore, if the Articles of the Christian Religion can be proved by Moral, though not by Metaphysical or Physical Demonstrations, it is sufficient to justify our assent,
and

& consequently, the other Articles of the Christian Faith, that are clearly and regularly deduced from such Demonstrated Truths, may also reasonably be assented to.

But further, our assent or dissent to embrace the Christian Religion, proposed both as a System of Speculative Doctrins, and a Body Laws, teaching us, that God Commands us to Worship him, and regulate our Lives, is an act of choice, and ought to be determined by the dictates of Prudence. And we may wish for, and endeavour after Reasons, to determin our Resolves, which may amount to Moral Demonstrations, yet Prudence will not always direct us to refuse to act upon less cogent Arguments; for in human Affairs, Hazards and Inconveniences will attend our Resolutions, and Prudence can only direct us to the most preferable Resolution, which yet may be liable to some Objections, which cannot be directly answered; but only by the prevalency of Arguments that direct our choice.

But in important Affairs, it may be said, we ought to suspend an Action, every way attended with Difficulties, and neither embrace nor reject the Christian Religion, till the Truth or Falsehood appear evident. Indeed in speculative points, where the Understanding is only conversant, to suspend our assent is the safest way; but *Cartesius*, who was the greatest Example of this Suspension, and urged it so much, declares, he would have it only practised about Speculations, not Actions, *sed hac interim dubitatio ad solem, Contemplationem veritatis restringenda; non quantum ad usum vite: Quia persaepe rerum agendarum occasio preteriret, antequam nos dubiis nostris exolvere possimus. Non raro quod tantum*

*est verifimile cogimur amplecti, et etiam interdum
 efi e duobus unum altero verifimilius non appereat,
 alterutrum tamen eligere.* And elfewhere he
 fays, it is unreasonable to expect in matter, where
 to embrace or reject a Courfe that requires pra-
 ctice is neceffary, fuch a certainty as is requifite
 to oblige a Philofopher to acquiefce in, in re-
 fpect of Propositions concerning Speculative
 Matters. And he was much accused for faying,
 a Man needed not as certain Grounds for chu-
 fing vertuous and avoiding vicious Courfes, as
 to determin Notional things.

But there is a difference in chufing or refu-
 fing a thing propofed; for it may be offered,
 where an advantage may be hoped for, or as
 a duty, which befides the advantage of the per-
 formance hath a penalty annexed to the neglect,
 or as an Expedient to fhun a great mifchief, or
 to obtain a great good. Thus when in the *Thea-
 trum Chymicum*, the chief Authors, who pretended
 to have been poffeffors of the Elixir, exhorted
 their Readers to apply themfelves to the Study
 of *Alchimy*, they make but a Proposition of the
 firft fort; for though a prosperous attempt to
 make the Philofophers Stone would mightily
 enrich a Man, yet if he either refufe to believe
 thefe Authors, or believes, and refufes to take
 due pains, he can only miff of the Riches, &c.
 they would encourage him to hope for, but is
 never the poorer for not engaging himfelf.
 But if a Sovereign lays a Command upon his
 Subjects, and not only offers Rewards for them
 that obey, but threatens heavy Penalties upon
 them that difobey, in this cafe a Man hath not
 the fame Latitude allowed as in the firft.

But

But if a Man by the Translation of Morbifick Matter, hath got a Gangrene in his Arm, and a Surgeon tells him the only way to preserve his Life is to part with his Arm; this is the last Case proposed, the losing of his Arm being the only way to recover his Health, where there are stronger Motives for a speedy resolution than in the first Case.

To apply this to our present purpose, the Christian Doctrin not only promises Heaven to sincere Believers, but threatens Hell to the obstinate. The advice of *Moses* to the *Jews* in this was, *Behold I set before you this day a Blessing and a Curse; a Blessing, if ye obey the Commandments of the Lord your God, which I command you this day, and a Curse, if ye will not obey the Commandments of the Lord your God, but turn aside out of the way which I command you this day, Deut. 11. 26, 27, 28.* And *Christ* gave this Commission to his Apostles to Preach the Gospel, *Go ye into all the World, and Preach the Gospel unto every Creature, he that believeth and is baptized shall be saved, but he that believeth not shall be damned, Mark 16. 15, 16.* so that, as far as there is Truth in the Christian Religion, he that refuses to be a Disciple to it, not only hazards the greatest blessing Men can hope for, but the greatest Misfortune they can fall into; so that our Case in respect of the Christian Religion may be refered not only to the Second, but the Third Case above mentioned; for our Saviour said, *If ye believe not that I am he, ye shall dye in your Sins, John 8. 24.* And one of the great *Heralds* of Christianity tells the *Jews*, that there is no Salvation in any other, for, *there is no other Name under Heaven*

given amongst Men, whereby we must be saved, Acts 4. 10. And the other tells the *Thessalonians*, the Lord shall be revealed from Heaven with his mighty Angels in flaming fire, taking Vengeance on them that know not God, and obey not the Gospel of our Lord Jesus Christ, who shall be punished with everlasting Destruction from the Presence of the Lord, and from the Glory of his Power, 2 Thes. 1. 7, 8, 9. Whence it appears, that the Christian Religion is not only proposed as an Offer of Heaven to those that embrace it, but as a Law which Men should be obedient to on the greatest Penalty; and the only way to gain Happiness, and escape Misery; so that refusing to submit our Neck to the Yoke of Christ, being the way to ruin us, as well as to reject it; our Reason is not so much to tell us, whether the Arguments for the Christian Religion are Demonstrations, and will qualify us to answer all Objections, but whether it's not more adviseable to perform the Conditions upon the hopes of the reward, or by refusing to run the hazard of endless Misery.

This may be thought a hard Case; but I shall here consider, that it relating to the Providence of God, who being the Author and Lord of his Creatures, who can receive neither Laws nor Obligations from them, but may prescribe what Laws he pleases, not impossible for them to obey, and to punish their Disobedience, and may annex what Conditions he pleases, of that happiness he offers, the Offer upon any Terms, being an act of his Goodness, and the value above what we can do to obtain it; especially, since he might have enforced his Commands by Penalties to the Disobedient without promising Rewards

Rewards for the performance; so that he hath given such Grounds for Expectations, that they are self condemned that refuse it: so that though the proof of the Christian Religion amounted not to Moral Demonstration, it would be Rational to embrace that Religion, if it only appeared more likely to be true than not to be true.

But this is not the only Case, where Prudence would oblige us to Resolutions, notwithstanding Doubts to the contrary.

But the hardness of the Case is, by most Men made to be this, that for a Religion, whose threats and promises are not Demonstrated, we must quit our pleasures, and undergo hardships and losses, exchanging what is certain for uncertainty. But to this I answer. *First*, That what we are to resign to become Christians, is but of little value, compared to the Goods we may acquire by parting with them. For what we are to forsake are but petty Enjoyments, which those that have enjoyed most, have pronounced them unsatisfactory, whilst they possessed them, they being likewise as transitory as empty, besides a Thousand Accidents may take them from us, and Death will certainly in a little time take us from them. If it be said, that these little Enjoyments are the only Happiness we can secure ourselves of, I think it for that Cause, the more reasonable to part with them, if necessary, on the hopes the Christian Religion gives us. For if a Man looks upon them with the Eye of a Philosopher or a Christian, such small Happinesses are scarce desirable, and if there be such Trans-

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cent Happiness as Christianity offers, that should be my Ambition. So that the meanness of earthly happiness will either make me think it no misery to be without it, or the Excellency of Heavenly Felicity will make me think it Wisdom to exchange Heavenly for Earthly Happiness.

But further, Christian Religion requires actions no more imprudent, than some others which are thought complying with the Dictates of Prudence, and some of them practised by Politicians in Affairs of State. Merchants at Sea, often throw their Goods over-board, and perhaps their Victuals, being neither sure that this Loss will save the Ship, or that it may not be saved without it. And the Wisest Men think themselves most so, when they toyle and deny themselves many things to provide advantageously for their Children, which they have but a Womens Word for, and consequently but a Moral Probability, that they are theirs.

Some Physicians, in the small Pox, are for bleeding, and others against it; if then the Patient be told, that without Bleeding the Distemper will be Mortal, and another tell him, that if he weakens Nature thus, the Disease will be too strong for him, what must a prudent Man do, where he can make no resolutions, which may not be opposed by probable Arguments, and where the suspension of his Resolution may be as hazardous, as either of their Advices. And he that hath a Gangrene in his Arm, if he consents to have it cut off, as Prudence directs, he is certain to lose one of his useful Limbs, and knows not but that he may save

save his Life without it, nor is certain he shall save it by it.

But to use more publick Instances, how many Generals and Commanders have hazarded their Lives to seize upon Places promised to be surrendered, when corrupted with Money, when all the ground they go upon, is the Faithfulness of a Traytor, that made that Criminal Agreement? And how many Politicians have either engaged in War, or taken Courses that would engage them, upon Informations from such as they have Corrupted in other Princes Councils, though at the same time, they must believe them faithless and perfidious Men.

These and a great many more Instances may be alledged, to shew, that a Man needs not quit his Reason, to fulfil the Conditions of the Gospel, though it wanted demonstrative Arguments. For the probability of obtaining inestimable Blessings, and more than a probability of enduring unspeakable Torments for the neglect, may reasonably induce a Man to fulfil the Conditions, and it will justify his Prudence, if it does but appear, that it is more probable some Religion should be true, than that so many attested Miracles alledged by the Antient Christians should be false; and that God, who hath made the World and Man, should leave him whom he hath so fitted, and by internal Laws obliged to worship him, undirected how to perform it. And that if any Religion be true, the Excellency of it's Doctrin and Promises, as also, Prophecies and Miracles, that bear witness of it, make the Christian most likely; the Records of it being made by honest plain

plain Men, who practiced as well as taught the strictest Vertue, and knew that Lying was condemned by their Religion; and who freely joyned their Doctrin and Relations with their Blood, which was so evidently true in the times it was performed, that the Evidence converted whole Nations, many of which were considerable and prudent Persons, who were both concerned, and had Opportunities to examin the Truth of them, and whose Education so much indisposed them to embrace Christianity, that to profess it sincerely, they were obliged to forsake both their former Religion and Vices, and expose their Lives and Fortunes for it.

If it be objected, that it's harsh, if not unreasonable, to assign so great a Penalty as Damnation, upon so firm an Assent as Faith, to Doctrins so obscurely delivered, and have not their Truth demonstrated; I answer, that I believe, there is no degree of Faith necessary to Salvation, which is not suitable to the Evidence, if Men through Laziness, Prejudices, Vice, Passions, Interest, or some other Defect are not wanting to themselves; for as God is just and gracious, and hath published the Gospel, that Men might be brought to Salvation by it, I cannot see, he makes any thing necessary to Salvation, that they may not as far as they are commanded, distinctly and explicitly believe, and what is not so delivered, I should not think or admit necessary to Salvation; for I am far from thinking, all the Tenets of the Schools, or particular Churches, to be so much as Christian Verities, and are therefore far from being fundamental and necessary ones; nor are all the Doctrins,

Doctrins, that concern fundamental Articles, fundamental too; as to the firmness of Assent supposed to be required by Christianity to the Articles it delivers, it may not be in all Cases so necessary to true and saving Faith, as many think it to be; for the Scripture it self tells us, that some of the Truths it reveals, are unfathomable Mysteries, and others hard to be understood, and it is unreasonable to suppose, that the highest degree of Assent, is to be given to such Articles, or those parts of them, when their obscurity keeps us from understanding them, as we do those more plainly revealed. Nor is the same degree of Faith necessary to all Persons, since Men's Capacities, Education, and their Opportunities of informing themselves, may dispose them to be diffident and apt to hesitate. And the same Arguments may appear evident enough to one, to gain his assent, when another Naturally more Sceptical, or better acquainted with the Difficulties and Objections urged by the opposite Party, may have considerable Doubts and Scruples. And when the Doctrine is not clearly delivered, or it's Proofs are not fully cogent; for that Man not to give so firm an assent, as demonstration may produce in another, is not an affront to the Veracity of God, since he may be heartily disposed and ready to believe all that shall appear to him revealed by God, and only doubts, whether the thing proposed be revealed by him, or whether the diffident Party rightly understands the Sence of the Words, the Revelation is contained in, which is not to distrust God but himself. And in some Cases, a degree of Faith not exempt from Doubts, may,

may, through God's Goodness be accepted, and even the Apostles made it their Prayer, that our Saviour *would increase their Faith*. And he who solicited him to help his Son, cryed out, *Lord I believe, help thou my unbelief*, and was so mercifully accepted by that high Priest, who is sensibly touched with our Infirmities, that his request was granted, though it could not be done without a Miracle. And our Saviours Disciples, when they were ready to perish, and were saved by their Master, he at the same time gave them the Epithite of *Men of little Faith*. And though Peter when he walked upon the Sea, having lost a degree of that Faith, which encouraged him in the Attempt, and was reprov'd by Christ, yet he was rescued from the Danger, both he and his Faith was in. And we are told in Scripture of a Faith no bigger than a Mustard Seed, that could move Mountains; so that a degree of Faith which is none of the greatest, may be accepted by God, and be rewarded by miraculous Exertions of his Power. The Faith then that is as necessary under the Gospel, as the genuine Fruit of it is Obedience, so it is not such a Faith as excludes doubts, but refusals. And tho' the assent is not so strong as might be produced by Demonstration, yet it may be accepted, if strong enough to produce Obedience. And as St Paul declares in one place, *That in Christ Jesus, neither Circumcision availeth any thing, nor Uncircumcision, but Faith operative through Love*, we may learn his meaning from a parallel Place, where in different Words, without varying the Sence of the later part of the Sentence, he says, *that in Christ Jesus, neither Circumcision availeth*
any

any thing, nor Uncircumcision, but the keeping the Commandment of God. Indeed, the Attainment of a higher degree of Faith, is always a Blessing, and cannot be too much prized nor aimed at, but there are Degrees in some kind of Vertues and Graces, which though it be a Happiness to reach them, yet the endeavouring after them, is an indispensable Duty. And the firmness of our Assent does in some Measure bring Honour to God, as the Father of the Faithful gave honour to God, being mighty in Faith, yet a practical assent, grounded on less doubted evidence, may have it's pre-eminence; for when Christ now risen, had said to the distrustful *Dichmus, Thomas, because thou hast seen me, thou believest*, he soon adds, *but blessed are those that have not seen, and yet have believed*; nor does he a little honour God, who willingly serves and obeys him, and is ambitious to be in a State, where he may always do so, that when what seems to be but a probability of the Christian Religion, being most acceptable to God, he embraces with all Difficulties and Dangers, and boldly resolves to submit to a present and actual resignation of all his Sins and Lusts, and perhaps his Interest and Life too, upon a comparatively uncertain hope of living with him hereafter.

Against what I have said in defence of the Christian Religion, perhaps it may be objected, *The Conclusion.* that at this rate of arguing, one may Apologize *tion.* for any Opinion, and reconcile the most unreasonable to right Reason. But it may easily be answered, that this Objection is either grounded upon a Mistake of my design, or overlooking what is supposed in it: For I pretend not, that the Considerations alledged, should pass for Demonstrations.

monstrations of the Christian Religion, which is to be proved by the Excellency of the Doctrine it teaches, and of the Rewards it promises, and several other Arguments, especially the Divine Miracles that attest it, but what I here undertook was, not to lay down the grounds why I received the Christian Religion, but to give an Answer, back'd with Reasons, to the Question, *Whether I did not think, that a Christian to continue such, must deny or lay aside his Reason?*

The Sum of the Answer is this, that the Doctrines really proposed by the Christian Religion, seeming by proper Arguments to be sufficiently proved in their kind; so that the Proofs of it, whether they be demonstrative or no, are sufficient to justify a rational and prudent Man's embracing it, this Religion seeming to have such positive Proofs for it, the Objections drawn from Reason against it, do not prove the Belief of it, inconsistent with right Reason, nor outweigh the Arguments alledged in it's Defence. The general Grounds of our design are proposed in the Considerations hitherto discoursed of, and if you attentively consider, what I write in that short Discourse, wherein I handle, that seeming popular Argument for Christianity, that is drawn from Miracles, that are said to attest it; you may think, that when all the other Proofs are taken in, a Man may without renouncing or affronting Reason be a Christian.

The Considerations I have alledged in behalf of some Mysteries of the Christian Religion, will not be equally applicable to the most absurd or unreasonable Opinions, these Considerations being

being offered as Apologies for Christian Doctrins, upon two or all of these three Suspicions. *First* That the Truth of the main Religion, of which such Doctrins make a Part, is so far positively proved by real and uncontrouled Miracles, and other competent Arguments, that nothing but the irreconcilableness of it's Doctrins to right Reason, ought to hinder us from believing them. The *Second* is, That divers of the things excepted against, are such as appear to Reason very difficult, or perhaps impossible for us to understand perfectly by our own Natural Light; and *Thirdly*, That some things in Christianity which are thought contrary to Reason, are but contrary to it, as it is incompetently informed and assisted, but not when assisted by Divine Revelation. And as these Suppositions are not justly applicable to any other, than the Christian Religion; so the last cautions us to be wary, how we admit what pretends to be Supernaturally Revealed; yet if it sufficiently appear to be so, we ought not to slight it. For as a Man may err, by rejecting or being ignorant of Truth, as well as by mistaking what is False for it; those who have an Instrument of Knowledge above other Men, have a great advantage towards acquiring of Truth, and may discover Truth, which others with Pride and Industry cannot attain to; as *Galileo* with his Telescope, made discoveries others never dreamed of. And if Men having heard of four Planets moving about *Jupiter*, and that *Venus* is an opacous Body, and sometimes horned; and had endeavoured to discover such things with the naked Eye, as *Galileo* might look on such
with

with indignation and pitty; so a judicious Christian, who upon due Examination admits the Scripture as true, looks upon those that think to discover heavenly Truth by mere Reason, as well as others do by Revelation. And as an Astronomer will examin, whether a Telescope be a proper Instrument to make discoveries with, and being once satisfied, will believe what it discovers; so an Inquirer into Religion, though cautious upon what Terms he believes the Scripture, yet if once satisfied, he ought to believe it, upon the Authority of that, he will believe whatever Supernatural Truths it discloses, which if the Scripture did not teach him so he would never assent to. And as the Galaxy and other white Places in the Sky, were once thought to be Meteors, yet by a Telescope appear to be Constellations; so there are Theological Doctrins, which to the Eye of Reason seem to be but fantastical Things, yet when Reason assisted by Revelation, comes to contemplate them, it plainly discovers them to be Celestial Lights, which their Sublimity keeps concealed from our Eyes.



FINIS

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